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PREDICTIONS OF $B(E2;\,0_1^+ \rightarrow 2_1^+)$ VALUES FOR EVEN–EVEN NUCLEI*

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Adopted values (from a previous compilation) for the energy, E, and the reduced electric quadrupole transition probability, $B(E2)\uparrow$, for the first-excited 2^+ state of 276 even–even nuclei are tabulated. The adopted $B(E2)\uparrow$ values are employed to test the various systematic, empirical, and theoretical relationships that have been proposed to exist among these $B(E2)\uparrow$ values on a global, local, or regional basis. On the basis of these systematics, predictions of unmeasured $B(E2)\uparrow$ values for 181 additional nuclei are made in the tabulation. © 1989 Academic Press, Inc.

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INTRODUCTION

We recently published an exhaustive compilation[1] of experimental results for the reduced electric quadrupole ($E2$) transition probability, $B(E2)\uparrow$, between the 0^+ ground state and the first 2^+ state in even–even nuclei. This compilation contains adopted $B(E2)\uparrow$ values for 276 nuclei. It also contains adopted energies, E, of the first 2^+ states for these nuclei together with energies, but not $B(E2)\uparrow$ values, for an additional 181 nuclei.

With this compilation as a starting point, we subsequently carried out a rigorous test[2] of the various systematic, empirical, and theoretical relationships (we refer to them collectively as "systematics") that had been proposed by different authors[3–8] to exist among these $B(E2)\uparrow$ values. We also generated some new systematics of our own. They can all be employed, in turn, to make predictions for a nucleus without an experimentally determined $B(E2)\uparrow$ value. Such predictions constitute the main topic of this compilation.

We use "systematics" here not in the wonted sense of noticing how the $B(E2)\uparrow$ values behave for a particular element (although we will eventually consider such behavior) but in the more general sense of emphasizing those existent relationships for broad classes of nuclei. We are interested, for example, in their global behavior. These values, moreover, vary over a wide dynamic range—from a low value of $0.002e^2b^2$ for ^{14}C to a high value of $16.7e^2b^2$ for ^{252}Cf. Therefore, our predictions of absolute $B(E2)\uparrow$ values should be viewed and judged not with undue predilections referring to a particular nucleus or a small set of selected nuclei but in a much broader context.

In Ref. 2, we discussed three broad types of systematics in terms of the measured $B(E2)\uparrow$ values or related quantities. The first was global and essentially brought out the energy and mass number dependencies of the γ-ray transition probability [which is related to the $B(E2)\uparrow$ value]. The second was local and emphasized the correlations between the $B(E2)\uparrow$ value for (N, Z) anchor nucleus and those for the nearby $(N+2, Z)$, $(N, Z+2)$, and $(N+2, Z+2)$ nuclei. The third was regional, the regions being bracketed by the magic numbers of protons and neutrons. We considered five different regions defined by the magic numbers $Z, N = 28$, 50, 82, 126, and 184. We then proceeded to understand the regional trends of the $B(E2)\uparrow$ values in terms of three schematic models: (a) interacting boson approximation (IBA) SU(3), (b) single-particle (sp) "SU(3)," and (c) large single-j simulation. The formulas given here are based largely on the formalisms elaborated in Ref. 2.

Global Systematics

The global systematics are developed in terms of the mean γ-ray lifetimes τ_γ. This quantity is related to the $B(E2)\uparrow$ value via the expression [τ_γ and τ are in units of psec, E in keV, $B(E2)\uparrow$ in e^2b^2, and the numerical factor in psec·keV^5]

$$\begin{aligned}\tau_\gamma &= \tau(1+\alpha)\\ &= (40.82 \times 10^{13})E^{-5}[B(E2)\uparrow/e^2b^2]^{-1}, \qquad (1)\end{aligned}$$

where E is the energy of the first-excited 2^+ state and α is the total internal conversion coefficient.

Bohr and Mottelson

Using the functional form derived by Bohr and Mottelson[3] within the framework of the hydrodynamic model, all available τ_γ values (omitting those for closed-shell nuclei) can be fitted by

$$\tau_\gamma = (5.94 \pm 2.43) \times 10^{14}E^{-4}Z^{-2}A^{1/3}, \qquad (2)$$

where A is the mass number.

Grodzins

The same data can also be fitted by the following expression, whose form was proposed empirically by Grodzins[4]:

$$\tau_\gamma = (2.74 \pm 0.91) \times 10^{13}E^{-4}Z^{-2}A^{1}. \qquad (3)$$

Best Fit

When the exponents of E and A are not held fixed as in the preceding two cases, the best global fit to the data is obtained by

$$\tau_\gamma = (1.25 \pm 0.50) \times 10^{14}E^{-(4.00\pm0.03)}Z^{-2}A^{(0.69\pm0.05)}. \qquad (4)$$

The values calculated using Eq. (4) are not as imprecise as they appear at first sight because the uncertainties are correlated (see later discussion). The $B(E2)\uparrow$ values follow from Eqs. (2)–(4) using Eq. (1). For a desired nucleus, knowledge of the energy of the first 2^+ state is all that is needed to predict its $B(E2)\uparrow$ value.

Local Systematics

Ross and Bhaduri

Ross and Bhaduri[5] noted that the F values for four neighboring nuclei satisfy the difference equation

$$F(N, Z) + F(N+2, Z+2) - F(N+2, Z) - F(N, Z+2) \sim 0, \qquad (5)$$

where

$$F(N, Z) = [E \times B(E2)\uparrow]^{-1}. \qquad (6)$$

Thus it is possible to deduce the F value [and hence the $B(E2)\uparrow$ value if E is known] for the fourth nucleus provided the F values for the three neighboring nuclei are also known.

Patnaik, Patra, and Satpathy

Patnaik, Patra, and Satpathy[6] proposed an even simpler difference equation [letting B denote $B(E2)\uparrow$]:

$$B(N, Z) + B(N+2, Z+2) - B(N+2, Z) - B(N, Z+2) \sim 0. \qquad (7)$$

They also proposed a difference equation for the energy of the first 2^+ state:

$$E(N, Z) + E(N+2, Z+2) - E(N+2, Z) - E(N, Z+2) \sim 0. \qquad (8)$$

Because we had shown in Ref. 2 that Eq. (8) works fairly well, we could have used this equation to predict E for those nuclei without an experimentally determined value. We could also have employed the $B(E2)\uparrow$ predictions [made via Eq. (5) or Eq. (7)] in a bootstrap manner to make predictions for still more nuclei. We chose to do neither.

While using Eq. (5) or Eq. (7), it is possible, occasionally, to obtain more than one prediction depending on the cardinal location of a particular nucleus in the midst of a four-nucleus cluster. In such cases, we averaged the predictions. In a few cases, the difference equations (5) and (7), due to their very nature, yield either negative or absurdly large $B(E2)\uparrow$ values. The former are discarded but the latter [which occur only with Eqs. (5) and (6), and are easy to spot as, for example, the value of $29.6e^2b^2$ for

^{92}Mo] are included for the sake of completeness. Unlike any other systematics discussed here, the local systematics, as expected, are quite sensitive to revisions in the $B(E2)\uparrow$ values (and their uncertainties) for nuclei in an affected locality. Such revisions are the norm, especially when dealing with nuclei far off the stability line.

Regional Systematics

For $A \geqslant 56$ nuclei considered in this section, the dimensionless deformation parameter β_2 is, to a good approximation, related to $B(E2)\uparrow$ via

$$\beta_2 = (4\pi/3ZR_0^2)[B(E2)\uparrow/e^2]^{1/2}, \qquad (9)$$

where R_0 is usually taken to be $1.2A^{1/3}$ fm ($R_0^2 = 0.0144A^{2/3}b$) and $B(E2)\uparrow$ is in units of e^2b^2. The single-particle (sp) value is given by

$$\beta_{2(\mathrm{sp})} = 1.59/Z. \qquad (10)$$

In Ref. 2, we developed the regional systematics by first plotting (see Figs. 7, 9, 12, and 13 of Ref. 2) either the experimentally derived $\beta_2/\beta_{2(\mathrm{sp})}$ or $B(E2)\uparrow$ as a function of the product $N_\mathrm{p}N_\mathrm{n}$, where the valence number of protons (neutrons), $N_\mathrm{p}(N_\mathrm{n})$, is defined as the number of particles below midshell and the number of holes past (see also Refs. 7 and 8). We then showed how the following four approaches reproduced the data with varying degrees of success. With slight modifications, we carry out those fits again here.

$\beta_2/\beta_{2(sp)}$ Systematics

In each region bracketed by the major magic numbers (Z, N = 28, 50, 82, 126, and 184), we fit the $\beta_2/\beta_{2(\mathrm{sp})}$ data by an expression of the form

$$\beta_2/\beta_{2(\mathrm{sp})} = C + D[1 - e^{-\alpha N_\mathrm{p}N_\mathrm{n}}], \qquad (11)$$

where C, D, and α are constants for that region (see Table A). If the fit is nearly linear, we use a simpler expression obtained by expanding the exponential term and retaining only the first two terms:

$$\beta_2/\beta_{2(\mathrm{sp})} = C + D\alpha N_\mathrm{p}N_\mathrm{n}. \qquad (12)$$

The $B(E2)\uparrow$ predictions follow immediately from Eqs. (9) and (10). Even though we start with a single fitted curve for each of the five regions, the mass number (A) and proton number (Z) dependencies implicit in these two equations lead to a family of curves, separated by Z, for the $B(E2)\uparrow$ values. Such curves (not shown here) are similar to Figs. 9, 12, and 13 of Ref. 2 for the three other schematic models discussed below. However, unlike the systematics based on these models, the $\beta_2/\beta_{2(\mathrm{sp})}$ systematics are strictly empirical in nature because the three constants for a particular region are fixed by the corresponding measured data points.

TABLE A

Values of Constants in Eqs. (11) and (12)

Region	C, D, and α
$28 \leqslant Z \leqslant 50$, $28 \leqslant N \leqslant 50$	$C = 3.17 \pm 0.15$ $D\alpha = (5.8 \pm 0.5) \times 10^{-2}$
$28 \leqslant Z \leqslant 50$, $50 \leqslant N \leqslant 82$	$C = 3.45 \pm 0.14$ $D\alpha = (5.3 \pm 0.4) \times 10^{-2}$
$50 \leqslant Z \leqslant 82$, $50 \leqslant N \leqslant 82$	$C = 3.37 \pm 0.13$ $D = 12.3 \pm 3.2$ $\alpha = (9.0 \pm 3.2) \times 10^{-3}$
$50 \leqslant Z \leqslant 82$, $82 \leqslant N \leqslant 126$ (including ^{208}Pb)	$C = 2.74 \pm 0.24$ $D = 13.1 \pm 0.5$ $\alpha = (9.3 \pm 0.8) \times 10^{-3}$
$82 \leqslant Z \leqslant 126$, $126 \leqslant N \leqslant 184$ (excluding ^{208}Pb)	$C = 1.59 \pm 0.34$ $D = 16.6 \pm 0.4$ $\alpha = (12.1 \pm 0.7) \times 10^{-3}$

IBA SU(3) Predictions

The $B(E2)\uparrow$ is proportional to the square of the intrinsic electric quadrupole moment Q_0, which is the sum of the intrinsic quadrupole moments Q_p and Q_n for the valence protons and neutrons, weighted by their effective charges e_p and e_n. In the SU(3) [and also SO(6)] limit of the IBA (intermediate-boson approximation),[9] the Q_p and Q_n are proportional to N_p and N_n, respectively. The $B(E2)\uparrow$ values (in units of e^2b^2) in each region are given by

$$B(E2)\uparrow \approx (1.02 \times 10^{-5})A^{2/3}(C_1)^2 4[N_\mathrm{p} + (e_\mathrm{n}/e_\mathrm{p})N_\mathrm{n}]^2, \qquad (13)$$

where the overall normalization constants C_1 (in units of eb) and the ratio of the neutron and proton effective charges ($e_\mathrm{n}/e_\mathrm{p}$) are determined by a fit to the data in that region. This fitting procedure (described in more detail in Ref. 2) does markedly improve the agreement with the data but is not a *sine qua non* as in the preceding case. The factor $(1.02 \times 10^{-5})A^{2/3}$ arises naturally and corresponds to $(5/16\pi)(\hbar/M\omega)^2$, where ($\hbar/M\omega$) is the oscillator size parameter, M is the nucleon mass (taken as 939 MeV/c^2), and $\hbar\omega = 41A^{-1/3}$ MeV. Values of C_1 and ($e_\mathrm{n}/e_\mathrm{p}$) for different regions are listed in Table B.

Single-Particle "SU(3)" Predictions

An alternative method for estimating Q_p and Q_n in a schematic "SU(3)" simulation and an illustrative example are shown in Figs. 10 and 11, respectively, of Ref. 2. There we simulate the quadrupole moments of the intrinsic single-particle state by the moments given by an

TABLE B

Values of Constants in Eqs. (13), (14), and (15)

Region	C_1 or C_2 or C_3	(e_n/e_p)
$28 \leq Z \leq 50$, $28 \leq N \leq 50$	C_1 1.85 ± 0.33	0.66
	C_2 1.43 ± 0.22	0.40
	C_3 1.33 ± 0.19	0.65
$28 \leq Z \leq 50$, $50 \leq N \leq 82$	C_1 1.92 ± 0.54	0.65
	C_2 1.11 ± 0.27	0.65
	C_3 1.19 ± 0.22	0.65
$50 \leq Z \leq 82$, $50 \leq N \leq 82$	C_1 2.84 ± 0.21	0.62
	C_2 1.19 ± 0.09	0.77
	C_3 1.22 ± 0.09	0.82
$50 \leq Z \leq 82$, $82 \leq N \leq 126$	C_1 2.61 ± 0.22	0.74
	C_2 1.37 ± 0.16	0.65
	C_3 2.00 ± 0.22	0.24
$82 \leq Z \leq 126$, $126 \leq N \leq 184$	C_1 4.24 ± 0.63	0.44
	C_2 1.45 ± 0.09	0.47
	C_3 1.27 ± 0.10	0.90

SU(3) representation with a degeneracy as close as possible to that of a major shell. (For example, the *s–d–g* simulation of the 50–82 shell contains 30 states instead of 32.) The major shells, of course, contain states of both parities; the SU(3) simulations, on the other hand, contain only one parity [hence the designation "SU(3)"] and yet effectively simulate the sequence of the moments. For predicting $B(E2)\uparrow$ values, we present in Table C a new set of Q values, obtained by stretching the distribution of the values (as a function of nucleon numbers) given by the SU(3) simulation (see Table II of Ref. 2) over the correct number of states. With the aid of this table, it is straightforward to deduce the $B(E2)\uparrow$ values (in units of e^2b^2) from the expression

$$B(E2)\uparrow \approx (1.02 \times 10^{-5})A^{2/3}(C_2)^2[Q_p + (e_n/e_p)Q_n]^2, \tag{14}$$

where C_2 and (e_n/e_p) are constants for a particular region (see Table B). The factor $(1.02 \times 10^{-5})A^{2/3}$ arises naturally as before.

Single-j Simulation

A major shell can also be simulated by a simpler "shell" consisting of a large single-*j* orbital with identical degeneracy. The $Q_p(Q_n)$ estimates for the intrinsic states of protons (neutrons) in the $j = 31/2$, $43/2$, and $57/2$ shells corresponding to the 50–82, 82–126, and 126–184 major shells, respectively, are given in Table II of Ref. 2. For improved consistency, we renormalize these estimates such that the sums of the new Q values listed in Table C under the stretched "SU(3)" and single-*j* columns are equal. Using Table C, $B(E2)\uparrow$ values (in units of e^2b^2) are obtained readily from

$$B(E2)\uparrow \approx (1.02 \times 10^{-5})A^{2/3}(C_3)^2[Q_p + (e_n/e_p)Q_n]^2, \tag{15}$$

when the constants C_3 and (e_n/e_p) are specified for each region (see Table B).

Underlying the above schematic SU(3) and single-*j* models is the idea that nuclei with four or more valence nucleons can be regarded as being "well deformed" in the sense that the low-lying states of an yrast band of such a deformed nucleus can be projected from a single intrinsic state. Therefore, even though it does not *ipso facto* lead to strange results, it is inappropriate to employ Eqs. (13)–(15) when considering nuclei with or near closed shells. On the other hand, such restrictions do not apply to Eqs. (11) and (12) because of their empiricism.

Each of the three schematic models [IBA SU(3), single-particle "SU(3)," and single-*j* simulation] discussed above requires just two constants per region to be specified (and no knowledge of the energy of the first 2^+ state) in order to be able to predict the $B(E2)\uparrow$ value for a desired nucleus. Moreover, the constants themselves are physically reasonable. For instance, in the five regions considered, the constants C_2 and (e_n/e_p) in the single-particle "SU(3)" model lie in the ranges 0.8–1.7 (including the error bars) and 0.4–0.8, respectively. Therefore, even though we did seek recourse to the data in determining these constants, the systematics based on these models are on a plane different from that of the $\beta_2/\beta_{2(sp)}$ systematics.

Testing the Predictions

An obvious way to test the predictive power of the formulas developed above is to forge ahead and predict the $B(E2)\uparrow$ values for those nuclei that already possess measured $B(E2)\uparrow$ values and to compare the two sets. The predictions are given in Table I and the comparisons are shown in Figs. I.1 through I.10. These comparisons demonstrate the validity not only of the overall approaches that we have employed but also of the specific uncertainties that we have assigned to the predicted values.

If the formula governing a particular systematic contains only one adjustable parameter, the central value of this parameter is determined by a least-squares fit to the data, and the corresponding uncertainty is given by procedures described in standard textbooks.[10] Such an approach applies, for instance, to Eqs. (2) and (3). The three formulas [see Eqs. (13), (14), and (15)] given by the schematic models each contain two parameters whose

TABLE C

Mass Quadrupole Moments $Q_p(Q_n)$ for Increasing Number $\mathcal{N}_p(\mathcal{N}_n)$ of Protons (Neutrons) in Various Shells

	28–50 shell			50–82 shell			82–126 shell			126–184 shell		
$\mathcal{N}_p$ ($\mathcal{N}_n$)	sp. "SU(3)" $(f-p)^N$	Stretched sp "SU(3)"	Single-*j* $(27/2)^N$	sp. "SU(3)" $(s\text{-}d\text{-}g)^N$	Stretched sp. "SU(3)"	Single-*j* $(31/2)^N$	sp. "SU(3)" $(p\text{-}f\text{-}h)^N$	Stretched sp. "SU(3)"	Single-*j* $(43/2)^N$	sp. "SU(3)" $(s\text{-}d\text{-}g\text{-}i)^N$	Stretched sp. "SU(3)"	Single-*j* $(57/2)^N$
0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
2	12	11.2	5.9	16	15.2	7.7	20	19.2	9.5	24	23.3	11.2
4	18	16.9	11.5	26	24.7	15.2	34	32.7	18.8	42	40.8	22.3
6	24	23.0	16.5	36	34.6	22.4	48	46.4	27.9	60	58.4	33.2
8	24	24.0	20.6	40	39.0	29.0	56	54.5	36.6	72	70.3	43.9
10	24	24.0	23.6	44	42.8	34.9	64	62.2	44.9	84	81.9	54.3
12	24	24.7	25.1	48	47.2	39.9	72	70.4	52.6	96	94.0	64.2
14	18	21.8	24.8	46	46.9	43.8	74	73.4	59.6	102	100.6	73.7
16	12	16.4	22.4	44	45.0	46.4	76	75.3	65.8	108	106.3	82.7
18	6	10.9	17.7	42	43.1	47.6	78	77.2	71.0	114	112.1	91.0
20	0	5.5	10.3	40	42.0	47.1	80	79.8	75.2	120	118.6	98.6
22		0.0	0.0	32	37.5	44.9	76	78.0	78.2	120	120.0	105.3
24				24	30.0	40.6	72	74.2	79.9	120	120.0	111.3
26				16	22.5	34.2	68	70.4	80.2	120	120.0	116.2
28				8	15.0	25.4	64	66.5	78.9	120	120.0	120.1
30				0	7.5	14.0	60	63.4	76.1	120	120.7	122.9
32					0.0	0.0	50	57.3	71.4	114	117.3	124.5
34							40	47.7	64.9	108	111.5	124.8
36							30	38.2	56.4	102	105.7	123.8
38							20	28.6	45.8	96	99.9	121.3
40							10	19.1	32.9	90	94.1	117.3
42							0	9.5	17.7	84	88.9	111.7
44								0.0	0.0	72	81.1	104.5
46										60	69.5	95.4
48										48	57.9	84.6
50										36	46.3	71.8
52										24	34.8	57.1
54										12	23.2	40.2
56										0	11.6	21.2
58											0.0	0.0

Note. The quadrupole moments are in units of the oscillator parameter $\alpha^2 = \hbar/M\omega = 1.01 \times 10^{-2}A^{1/3}$ b. The listed moments are for prolate intrinsic states.

values are to be determined again by a least-squares fit to the data, but the estimation of uncertainty can be simplified by treating (e_n/e_p) as a fixed value. In the case of the local systematics [see Eqs. (5) and (7)], the uncertainty analysis is straightforward. If more than one parameter is involved, as in the cases of Eqs. (4), (11), and (12), a least-squares approach will lead to a covariance matrix for the various parameters that need to be taken into account in the uncertainty analysis. If, for example, the parameters are strongly correlated, the final uncertainty can be quite small even though the parameters themselves carry large uncertainties.

The uncertainties quoted in the current $B(E2)\uparrow$ predictions are based on the considerations described in the preceding paragraph. An alternative way of testing the predictions is shown in Table D, where we compare how well they reproduce the data. In all but two cases, the degree of agreement is similar to that expected for a standard distribution with a well-defined variance. There is no *a priori* reason why the standard distribution norm should apply (except that it has an intuitive ring to it); nor did we contrive to achieve this similarity. Nevertheless, with the aid of Table D, we have established a confidence level for the predictions. By the same norm, it may appear from Table D that the uncertainties in the predictions based on the global best fit and regional $\beta_2/\beta_{2(\mathrm{sp})}$ fit are underestimated; multiplying their uncertainties (quoted in Table I) by factors of 1.4 and 1.7 will remedy that

TABLE D

Number of $B(E2)\uparrow$ Predictions That Agree (within the Stated Uncertainties) with Previous Measurements

Type of systematics	Number of measurements[a]	Percent in agreement within[b]		
		1σ	2σ	3σ
Global				
Bohr and Mottelson	276	80	>99	>99
Grodzins	276	74	>99	100
Best Fit	276	49	80	91
Local				
Ross and Bhaduri	252	63	89	95
Patnaik et al.	250	62	90	95
Regional				
$\beta_2/\beta_{2(\mathrm{sp})}$ Fit	229	52	72	85
IBA SU(3)	168	71	95	>99
Stretched sp. "SU(3)"	168	74	90	>99
Single-j	168	70	95	100
Standard distribution		68	95	>99

[a] The number of measurements included in the respective regional fit is the same as that listed in this column. The global fits excluded measurements for 35 closed-shell nuclei.

[b] The symbol 1σ denotes that there is overlap within the uncertainties quoted in Table I for the predicted and the measured values; 2σ means there is overlap within twice the uncertainties; etc.

situation. Even with these factors, these two types of systematics generally yield predictions with smaller uncertainties than those based on the other nuclear models.

The stretched single-particle "SU(3)" and single-j predictions have been made in Table I for 168 nuclei on the basis that they are all prolate. The calculations of Möller and Nix[11] suggest that 29 of them might be oblate. Because the distribution of quadrupole moments (see Table C) is nearly symmetric, we find that the specific prolate–oblate assumption does not affect either the $B(E2)\uparrow$ predictions (except near closed shells) or the overall agreement between the predictions and the data in a significant manner.

Yet another way to test the predictions (see Table E) is to examine how well they reproduce new measurements. The latter can be split into two categories: (a) nuclei for which an adopted $B(E2)\uparrow$ value was given in the previous compilation[1] (based on the literature up to the end of 1985) and (b) nuclei with a $B(E2)\uparrow$ value reported for the first time. Most of these measurements pertain to nuclei far off the stability line; they are intrinsically difficult, and the results are often discordant. When there is only one reported value we have no choice, but when two values are listed in Table E for a particular nucleus, we select, for the sake of this test, that listed as the bottom value. With this choice, the "global best fit" correctly reproduces (within stated uncertainties) 13 out of 18 cases; the "regional $\beta_2/\beta_{2(\mathrm{sp})}$ fit" does the same for 12 out of 18 cases; and the "local Ross and Bhaduri" systematics (available only for a restricted number of cases) for 4 out of 9 cases. Given the current status of these measurements, this level of agreement is about what we would expect.

The intrinsic electric quadrupole moment Q_0 (in units of b) is related to $B(E2)\uparrow$ (in e^2b^2) via the expression

$$Q_0 = \left[\frac{16\pi}{5}\frac{B(E2)\uparrow}{e^2}\right]^{1/2} . \tag{16}$$

The equilibrium (static) Q_2 values listed by Möller and Nix[11] can be employed in place of Q_0 in Eq. (16) to generate a global set of $B(E2)\uparrow$ predictions. The resulting values are given in Table I under the "global calculation" column and compared with the experimental values in Fig. I.10. The error bars shown there reflect only the uncertainties in the latter values.

Equation (16) is valid only when Q_0 is large; for near-spherical nuclei, $B(E2)\uparrow$ depends on the amplitude of the quadrupole vibrations and not on Q_0. Therefore, the large number of near-zero ratios in Fig. I.10 is more an indication that the corresponding nuclei have near-spherical shapes in the calculations than of genuine discrepancies. Disregarding these near-zero ratios, the Möller and Nix[11] calculations still underpredict most of the measured $B(E2)\uparrow$ values, but a portion of this discrepancy can be attributed to the use of the static Q_2 values in Eq. (16).

Using the Predictions

The obvious use of the current predictions is in checking the validity of a measurement. For a desired nucleus, the expected trends are best visualized with the help of figures such as those shown in Figs. II.1–II.3 for selected nuclei. We emphasize again that the global, local, and regional systematics have been developed from entirely different perspectives, and yet they predict very similar overall trends. These trends, in turn, are more important than the predicted absolute values themselves. Therefore, when a putative value is at variance with all three types of systematics, as is the case with the $B(E2)\uparrow$ value for ^{172}W shown in Fig. II.3, the measurement needs to be checked again.

In the graphs (see Fig. III) following Table I, instead of all nine types of predictions as in Figs. II.1–II.3 we show a subset of three predictions, one each from the global, local, and regional systematics, for all even–even nuclei (totaling 457) for which the energies of the first 2^+ states have been reported. These figures reveal at a glance

TABLE E

Measured $B(E2)\uparrow$ Values Reported after the Publication of Ref. 1 and Comparison with Current Predictions

		Predicted $B(E2)\uparrow(e^2b^2)$				
Nucleus[a]	E (level) (keV)	Global Best Fit[b]	Local Ross and Bhaduri[c]	Regional $\beta_2/\beta_{2(sp)}$ Fit[d]	Measured $B(E2)\uparrow(e^2b^2)$	Ref.[h]
^{70}Se	945.4	0.214 ± 0.031	0.129 ± 0.024	0.317 ± 0.026	0.34 ± 0.08 0.36 ± 0.07	Ref. 1 86He17
^{72}Se	862.0	0.230 ± 0.032	0.36 ± 0.07	0.421 ± 0.037	0.175 ± 0.020 0.238 ± 0.020	Ref. 1 86He17
^{78}Se	613.8	0.306 ± 0.036	0.330 ± 0.025	0.276 ± 0.022	0.335 ± 0.009 0.39 ± 0.07	Ref. 1 87Sc07
^{98}Sr	144.2	1.39 ± 0.25	0.85 ± 0.020	1.01 ± 0.10	0.97 ± 0.11 1.31 ± 0.06	Ref. 1 87Oh05
^{114}Pd	332.9	0.79 ± 0.08	0.64 ± 0.14	0.67 ± 0.05	0.34 ± 0.10 0.19 ± 0.04	Ref. 1 86Ma22
^{138}Xe	589.0	0.54 ± 0.10		0.29 ± 0.06	(0.024 ± 0.004)[e] ⩾0.024	Ref. 1 86Ma22
^{142}Ba	359.5	0.94 ± 0.13		0.63 ± 0.09	0.68 ± 0.06 0.76 ± 0.06	Ref. 1 86Ma22
^{144}Ba	199.3	1.67 ± 0.18	1.02 ± 0.18	0.94 ± 0.10	1.04 ± 0.06 0.75 ± 0.31	Ref. 1 86Ma22
^{132}Nd	213.0	1.91 ± 0.20		2.3 ± 1.0	2.54 ± 0.24 2.30 ± 0.21	86Ma39 87Wa02
^{134}Nd	294.2	1.37 ± 0.14		1.9 ± 0.8	1.91 ± 0.13 1.17 ± 0.10	87Bi13 87Wa02
^{136}Nd	373.5	1.07 ± 0.14		1.5 ± 0.6	>0.50	87Bi13
^{134}Sm	163.0	2.64 ± 0.31		2.7 ± 1.4	4.1 ± 0.4	87Wa02
^{136}Sm	256.0	1.66 ± 0.17		2.3 ± 1.0	1.82 ± 0.16 1.82 ± 0.16	86Ma39 87Wa02
^{138}Sm	346.7	1.21 ± 0.15		1.8 ± 0.8	1.64 ± 0.34 1.21 ± 0.27	Ref. 1 86Ma39
^{172}W	122.9	4.2 ± 0.5	4.3 ± 1.0	3.99 ± 0.36	(5.91 ± 0.48)[f] (4.37 ± 0.24)[g]	86Ra07 80Mi16
^{174}W	113.0	4.5 ± 0.6	4.9 ± 1.3	4.44 ± 0.39	3.94 ± 0.25	87Ga14
^{174}Os	158.5	3.4 ± 0.4		3.16 ± 0.27	4.6 ± 0.6	87Ga12
^{184}Pt	163.0	3.35 ± 0.42	5.1 ± 0.5	2.87 ± 0.26	3.95 ± 0.14 3.52 ± 0.14	Ref. 1 86Ga21

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[a] For nuclei marked bold, measured $B(E2)\uparrow$ values have appeared in the literature for the first time.

[b] Uncertainties quoted in the "Best Fit" column of Table I have been multiplied by 1.4.

[c] Values from the "Ross and Bhaduri" column of Table I.

[d] Uncertainties quoted in the "$\beta_2/\beta_{2(sp)}$ Fit" column of Table I have been multiplied by 1.7.

[e] This value, reported earlier by the first author of 86Ma22, has now been withdrawn.

[f] Reference 1 lists $B(E2)\uparrow = 5.85 \pm 0.48\ e^2b^2$ for ^{172}W reported earlier by the same authors.

[g] Indirect value (therefore not included in Ref. 1) deduced from the $4^+ \rightarrow 2^+$ lifetime and the rotational model. Included here to bring out the discrepancy with the directly measured value of 86Ra07.

[h] See references for Table E following the references for the text.

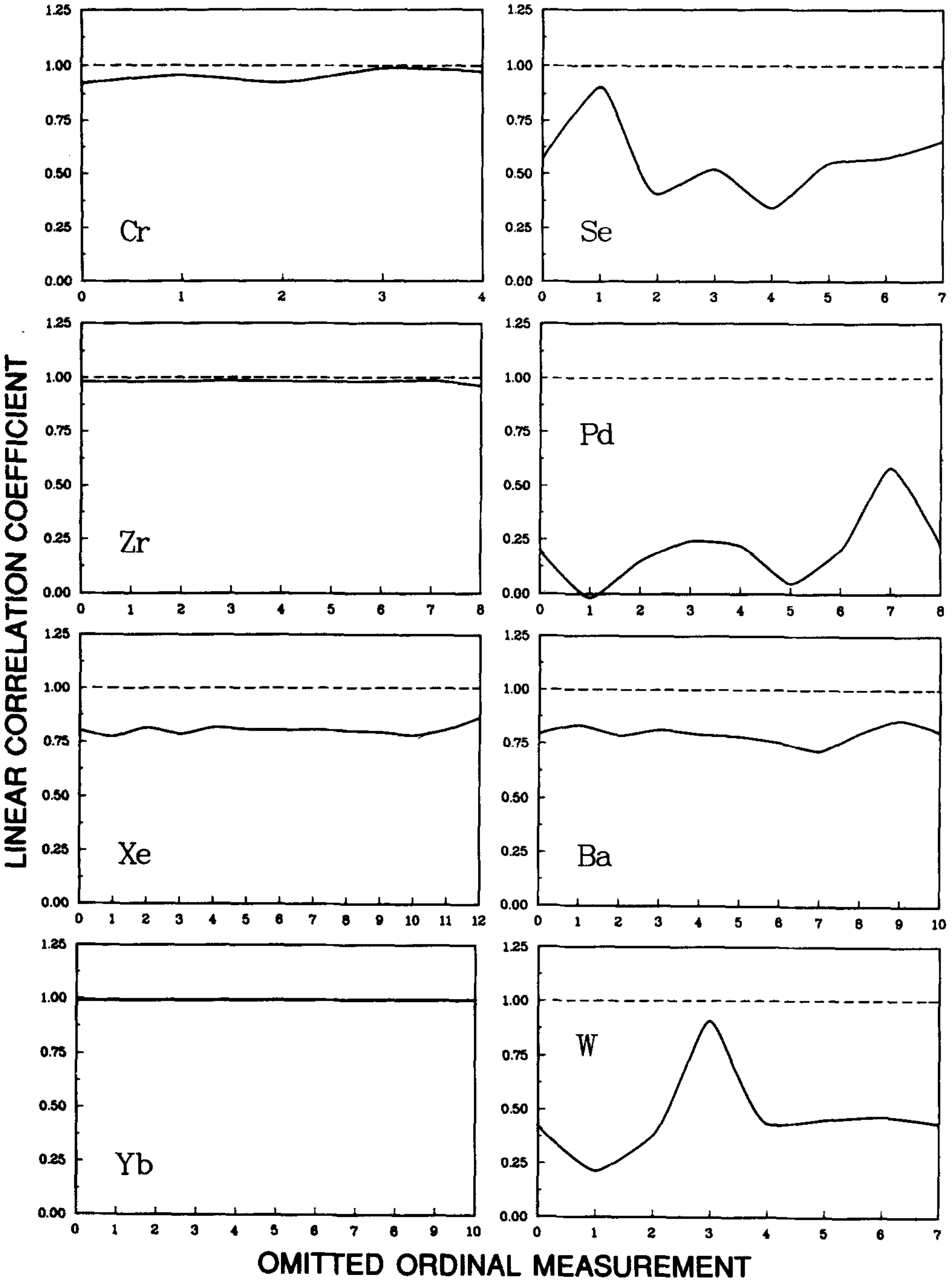

Figure A. Linear correlation coefficients for selected elements between paired $B(E2)\uparrow$ values from the "Measured Value" and "Global Systematics—Best Fit" columns of Table I. Along the abscissa, 0 denotes that all isotopes are considered; 1 that the first isotope (that is, the lightest isotope) is omitted; 2 that the second isotope is omitted; and so on.

those nuclei with $B(E2)\uparrow$ values that fail to follow the expected systematic trend and hence warrant remeasurements.

To test for consistency with the current systematics, we also recommend the calculation of the linear correlation coefficients, ρ, such as those shown in Fig. A between paired samples of "measured value" and "global best fit." Consider, for example, the plot for chromium. Table I shows that measured $B(E2)\uparrow$ values exist for ^{48}Cr, ^{50}Cr, ^{52}Cr, and ^{54}Cr. If all four measured values are con-

TABLE F

$B(E2)\!\uparrow$ Values for Selected Nuclei Emitted during the Cold Fragmentation of ^{233}U Induced by Slow Neutrons

Nucleus	E (level) (keV)	Predicted $B(E2)\!\uparrow(e^2b^2)$ Global Best Fit[a]	Regional $\beta_2/\beta_{2(sp)}$ Fit[b]	Möller and Nix[c]	Measured $B(E2)\!\uparrow(e^2b^2)$
^{80}Ge	659.4	0.25 ± 0.03	0.12 ± 0.02	0.049	
^{154}Nd	66.6[d]	5.5 ± 1.1	3.29 ± 0.30	3.46	
^{82}Ge	1348.1	0.12 ± 0.03	0.09 ± 0.03	0.004	
^{152}Nd	72.6	5.1 ± 1.0	2.74 ± 0.24	3.35	2.6 ± 0.7
^{84}Se	1455.1	0.12 ± 0.03	0.09 ± 0.02	0.009	
^{150}Ce	97.1	3.6 ± 0.6	2.18 ± 0.19	2.49	3.1 ± 0.6
^{86}Kr	1564.6	0.13 ± 0.03	0.09 ± 0.03	0.004	0.122 ± 0.010
^{148}Ba	142.5	2.30 ± 0.28	1.62 ± 0.15	2.01	
^{88}Kr	775.3	0.25 ± 0.04	0.22 ± 0.03	0.004	
^{146}Ba	180.8	1.83 ± 0.20	1.27 ± 0.12	1.29	1.35 ± 0.10
^{90}Kr	707.1	0.27 ± 0.04	0.32 ± 0.03	0.12	
^{144}Ba	199.3	1.67 ± 0.18	0.94 ± 0.10	0.725	1.04 ± 0.06
^{92}Sr	814.7	0.26 ± 0.04	0.38 ± 0.03	0.064	
^{142}Xe	205.0	1.53 ± 0.17	0.63 ± 0.09	0.53	
^{94}Sr	836.9	0.25 ± 0.04	0.55 ± 0.04	0.48	
^{140}Xe	376.8	0.84 ± 0.11	0.45 ± 0.07	0.143	0.323 ± 0.014
^{96}Sr	815.5	0.25 ± 0.04	0.76 ± 0.06	1.02	
^{138}Xe	589.0	0.54 ± 0.10	0.29 ± 0.06	0.004	
^{98}Zr	1222.8	0.18 ± 0.04	0.78 ± 0.07	1.08	
^{136}Te	554.8[d]	0.54 ± 0.11	0.22 ± 0.03	<0.001	
^{100}Zr	212.7	1.03 ± 0.13	1.04 ± 0.10	1.36	0.90 ± 0.11
^{134}Te	1279.1	0.24 ± 0.07	0.23 ± 0.03	<0.001	
^{102}Mo	296.6	0.80 ± 0.08	0.83 ± 0.07	1.22	1.06 ± 0.12
^{132}Sn	4040.6	0.07 ± 0.03	0.24 ± 0.05	<0.001	
^{104}Mo	192.3	1.22 ± 0.17	1.04 ± 0.10	1.44	1.08 ± 0.08
^{130}Sn	1221.2	0.23 ± 0.06	0.24 ± 0.05	<0.001	
^{106}Mo	171.7	1.35 ± 0.20	1.29 ± 0.14	1.51	1.30 ± 0.07
^{128}Sn	1168.8	0.25 ± 0.07	0.23 ± 0.05	<0.001	
^{108}Mo	172.1	1.33 ± 0.18	1.57 ± 0.17	1.36	1.34 ± 0.31
^{126}Sn	1141.2	0.26 ± 0.07	0.23 ± 0.05	<0.001	

[a] Uncertainties quoted in the "Best Fit" column of Table I have been multiplied by 1.4.

[b] Uncertainties quoted in the "$\beta_2/\beta_{2(sp)}$ Fit" column of Table I have been multiplied by 1.7.

[c] Values from the Möller and Nix column of Table I.

[d] Value deduced using Eq. (8).

sidered, $\rho = 0.92$. The value of ρ changes only slightly to 0.96, 0.92, 0.99, and 0.97 when the data for ^{48}Cr, ^{50}Cr, ^{52}Cr, and ^{54}Cr are omitted sequentially during calculation of ρ for the remaining three data sets. The correlation between the measured values and predictions is very strong even though the absolute "global best fit" predictions for Cr isotopes are ≈45% larger than the measured values. Figure A shows that the correlation is similarly very strong for two other examples (Zr and Yb) shown there. In the cases of Xe and Ba, the ρ values are in the range 0.7 to 0.9, suggesting that while the correlation is strong, two or more measured values are inconsistent with the specified predictions. The ρ values for Se and W remain, on the other hand, in the range 0.2 to 0.6 (indicating only weak correlation) until one particular measurement (^{70}Se in the case of Se and ^{172}W in the case of W) is excluded. The high ρ value for the remaining data sets (six each for Se and W) suggests that the ^{70}Se and ^{172}W cases need to be remeasured. Finally, the near absence of correlation in the case of Pd possibly reflects difficulties in obtaining reliable $B(E2)\uparrow$ values for the heavier isotopes that lie far off the stability line (see the summary figure for Pd).

In many theoretical calculations, the current compilation should be useful for providing reasonable estimates of the $B(E2)\uparrow$ values [or, equivalently, the deformation parameters β_2 via Eq. (9) for $A \geqslant 56$ nuclei or the intrinsic electric quadrupole moments Q_0 via Eq. (16) for strongly deformed nuclei] in the absence of reliable measured values. We cite just one example. Cold fragmentation is a rare fission process in which the nuclei resulting from fission are produced directly in their ground states. Consequently, neither neutrons nor γ rays are emitted and the entire released energy appears as the kinetic energy of the fragments. This energy should equal the Coulomb energy of the scission configuration of the fragments. The Coulomb energy, in turn, depends sensitively on the deformations of the two fragment nuclei in their ground states. Hence a knowledge of these deformations is essential for the quantitative understanding of the energetics of the cold fragmentation process. In the past, the Möller and Nix[11] values usually fulfilled this role.

In Table F, we list some of the nuclei expected to be emitted during the cold fragmentation of ^{233}U induced by slow neutrons.[12] For the application at hand, consider our predictions based on the "regional $\beta_2/\beta_{2(\mathrm{sp})}$ fit." These values are in reasonable agreement with both the measured values (that exist only for 11 out of 30 nuclei listed in Table F) and the Möller and Nix[11] values—the latter, however, only when $B(E2)\uparrow > 0.5$. Based as they are on empirical fits to the data, our "$\beta_2/\beta_{2(\mathrm{sp})}$ fit" predictions are expected to work equally well for nuclei possessing both large and small deformations.

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EXPLANATION OF FIGURES

FIGURE I.1. Test of Eq. (2)

The calculated $B(E2)\uparrow$ values are from the "Bohr and Mottelson" column and the experimental $B(E2)\uparrow$ values from the "Measured Value" column, both from Table I.

FIGURE I.2. Test of Eq. (3)

The calculated $B(E2)\uparrow$ values are from the "Grodzins" column and the experimental $B(E2)\uparrow$ values from the "Measured Value" column, both from Table I.

FIGURE I.3. Test of Eq. (4)

The calculated $B(E2)\uparrow$ values are from the "Best Fit" column and the experimental $B(E2)\uparrow$ values from the "Measured Value" column, both from Table I.

FIGURE I.4. Test of Eq. (5)

The calculated $B(E2)\uparrow$ values are from the "Ross and Bhaduri" column and the experimental values from the "Measured Value" column, both from Table I.

FIGURE I.5. Test of Eq. (7)

The calculated $B(E2)\uparrow$ values are from the "Patnaik et al." column and the experimental $B(E2)\uparrow$ values from the "Measured Value" column, both from Table I.

FIGURE I.6. Test of Eqs. (11) and (12)

The calculated $B(E2)\uparrow$ values are from the "$\beta_2/\beta_{2(\mathrm{sp})}$ Fit" column and the experimental $B(E2)\uparrow$ values from the "Measured Value" column, both from Table I.

FIGURE I.7. Test of Eq. (13)

The calculated $B(E2)\uparrow$ values are from the "IBA SU(3)" column and the experimental $B(E2)\uparrow$ values from the "Measured Value" column, both from Table I.

FIGURE I.8. Test of Eq. (14)

The calculated $B(E2)\uparrow$ values are from the "Stretched sp. "SU(3)"" column and the experimental $B(E2)\uparrow$ values from the "Measured Value" column, both from Table I.

FIGURE I.9. Test of Eq. (15)

The calculated $B(E2)\uparrow$ values are from the "Single-j Simulation" column and the experimental $B(E2)\uparrow$ values from the "Measured Value" column, both from Table I.

In Figs. I.1–I.9, the error bars reflect the quoted uncertainties (combined quadratically) in both the calculated and experimental $B(E2)\uparrow$ values.

EXPLANATION OF FIGURES continued

FIGURE I.10. Test of the Global Calculations of Ref. 11

The calculated $B(E2)\uparrow$ values are from the "Möller and Nix" column and the experimental $B(E2)\uparrow$ values from the "Measured Value" column, both from Table I.

In Fig. I.10, the error bars reflect only the quoted uncertainties in the experimental $B(E2)\uparrow$ values.

In Figs. I.1–I.10, filled squares denote ratios that fall in the range 0.9 to 1.1; filled circles those in the ranges 0.7 to 0.9 and 1.1 to 1.3; open triangles those in the ranges 0.4 to 0.7 and 1.3 to 1.6; and open diamonds those in the ranges <0.4 and >1.6. Also, if the ratios and their error bars extend beyond 3.0 or 0.0, they are suppressed in these figures.

FIGURE II.1. Comparison between Predicted and Experimental $B(E2)\uparrow$ Values for Krypton and Ruthenium Isotopes

FIGURE II.2. Comparison between Predicted and Experimental $B(E2)\uparrow$ Values for Cerium and Erbium Isotopes

FIGURE II.3. Comparison between Predicted and Experimental $B(E2)\uparrow$ Values for Tungsten and Thorium Isotopes

In Figs. II.1–II.3, the curves connecting the predicted points have been smoothed by the method of rational splines (cubic splines with tension). The backbending in the case of the "Local RB" curve in Ru (see Fig. II.1) is an artifact caused by this smoothing. Except for abbreviating Grodzins (G), Bohr and Mottelson (BM), Ross and Bhaduri (RB), and Patnaik et al. (PPS), the labels represent the headings and the curves the corresponding predicted values given in Table I. The experimental values are from the "Measured Value" column of the same table.

FIGURE III. Summary Graphs of $B(E2)\uparrow$ Predictions for Helium to Fermium Isotopes

The summary graphs following Table I show the predicted $B(E2)\uparrow$ values for all even–even nuclei for which the energies of the first 2^+ states are known. The curves connecting the predicted points have been smoothed by the method of rational splines (cubic splines with tension). In a few cases (see, for example, the "*GLOBAL* BEST FIT" curve for Sr) this smoothing procedure results in artificial backbends. Except for abbreviating Ross and Bhaduri (RB) and Patnaik et al. (PPS), the labels represent the headings and the curves the corresponding predicted values given in Table I. The shaded bands denote the uncertainties in the predictions. Also shown are the measured $B(E2)\uparrow$ values and their uncertainties from Table I.

EXPLANATION OF TABLE

TABLE I. Predicted Values of $B(E2)\uparrow$ in Units of (e^2b^2)

Throughout this table, italicized numbers refer to the uncertainties in the last digits of the quoted values.

Nucleus	The even Z, even N nucleus studied
E (level)	Energy of the first 2^+ state in keV from Ref. 1
Measured Value	Measured $B(E2)\uparrow$ value from Ref. 1. We have, however, omitted the values for ^{52}Ti, ^{56}Ni, and ^{146}Sm because they are only lower limits and those for ^{96}Zr and ^{152}Dy because they carry large (⩾44%) uncertainties.
Global Systematics	Predicted $B(E2)\uparrow$ value from Bohr and Mottelson—see Eqs. (2) and (1) Grodzins—see Eqs. (3) and (1) Best Fit—see Eqs. (4) and (1)
Local Systematics	Predicted $B(E2)\uparrow$ value from Ross and Bhaduri—see Eqs. (5) and (6) Patnaik et al.—see Eq. (7) Prior to using these values, we recommend a reevaluation to take into account any additions or revisions in the $B(E2)\uparrow$ values in the relevant locality.
Regional Systematics	Predicted $B(E2)\uparrow$ value from $\beta_2/\beta_{2(\mathrm{sp})}$ Fit—see Eqs. (11) and (12), and then Eqs. (9) and (10) IBA SU(3)—see Eq. (13) Stretched sp. "SU(3)"—see Eq. (14) Single-j Simulation—see Eq. (15)
Global Calculation	Q_2 values of Möller and Nix (Ref. 11) converted to $B(E2)\uparrow$ values via Eq. (16). A blank means $B(E2)\uparrow < 0.001$.

FIGURE I.1. Test of Eq. (2)
See page 13 for Explanation of Figures

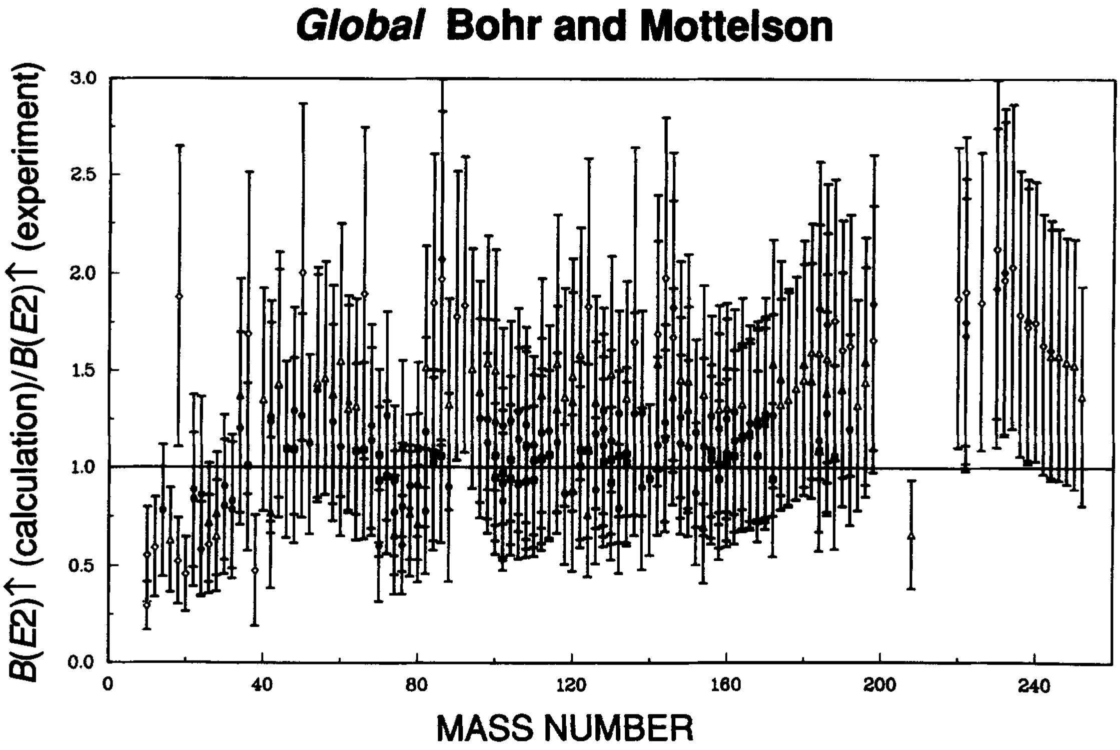


FIGURE I.2. Test of Eq. (3)
See page 13 for Explanation of Figures

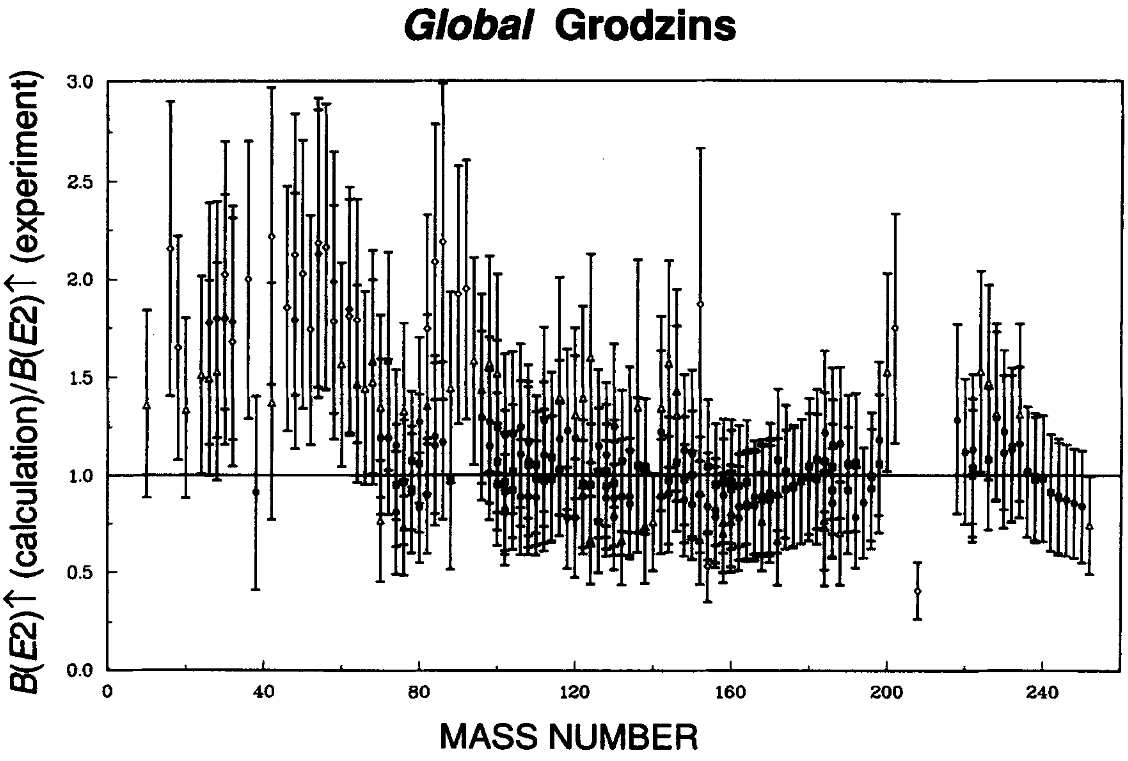


FIGURE I.3. Test of Eq. (4)
See page 13 for Explanation of Figures

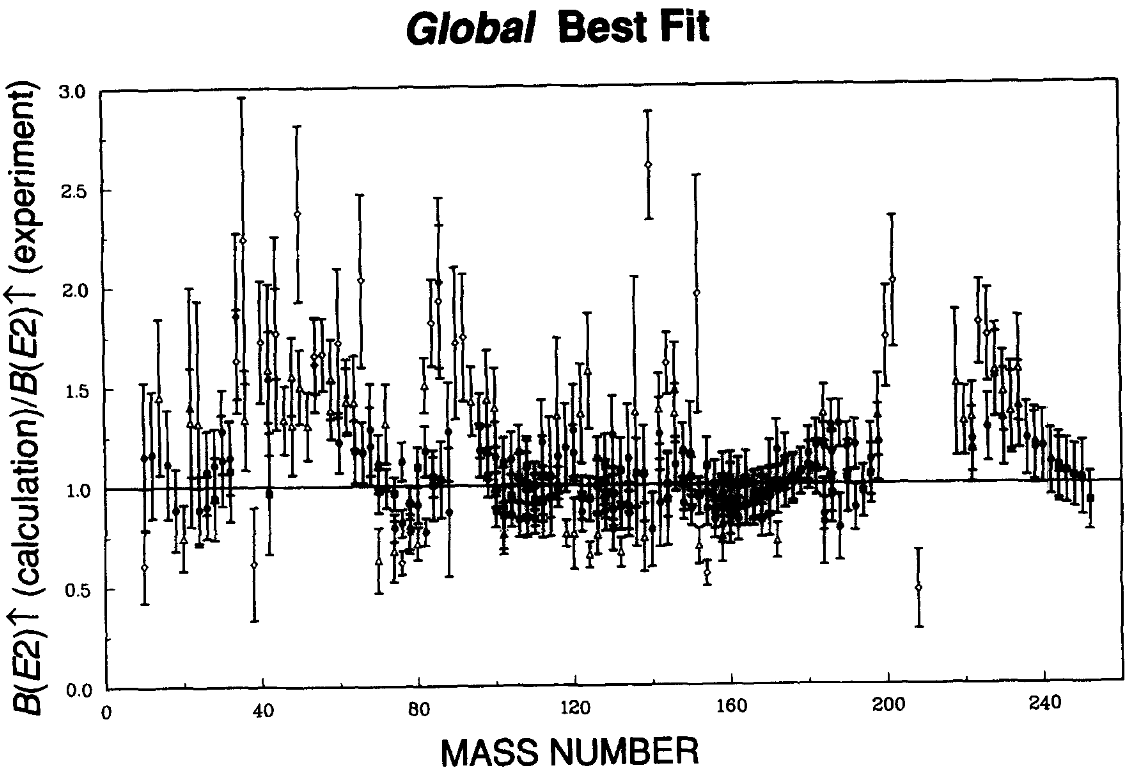


FIGURE I.4. Test of Eq. (5)
See page 13 for Explanation of Figures

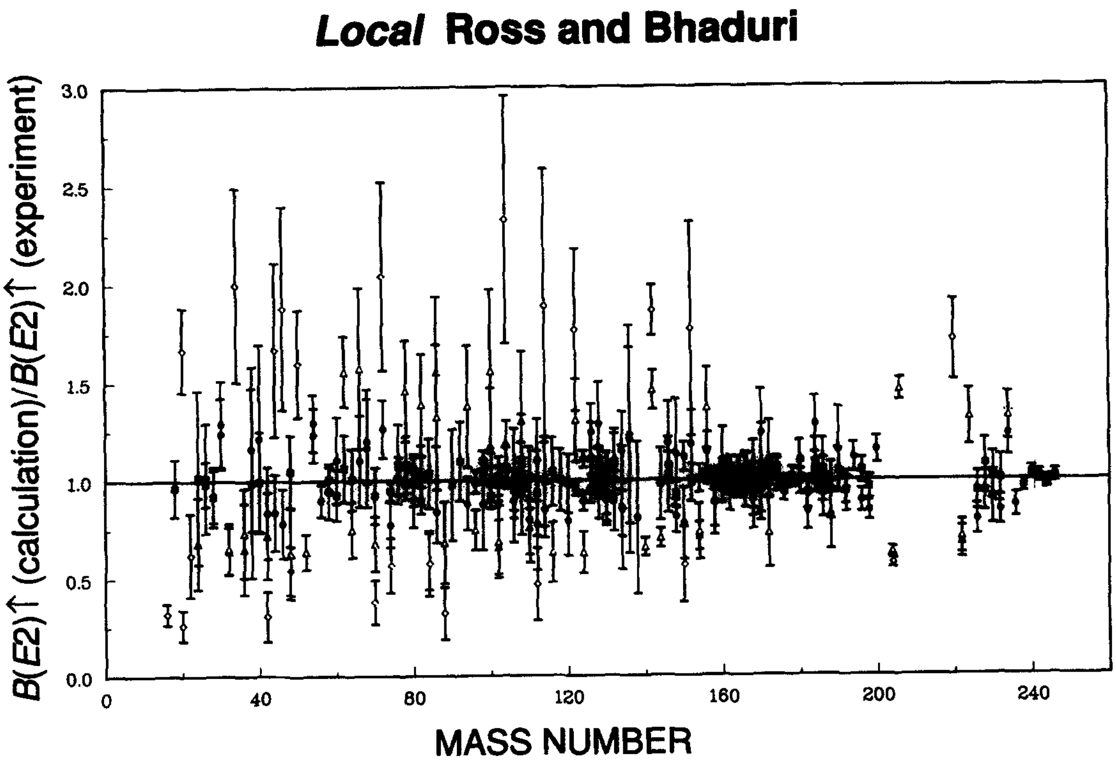


FIGURE I.5. Test of Eq. (7)
See page 13 for Explanation of Figures

Local Patnaik, Patra, and Satpathy

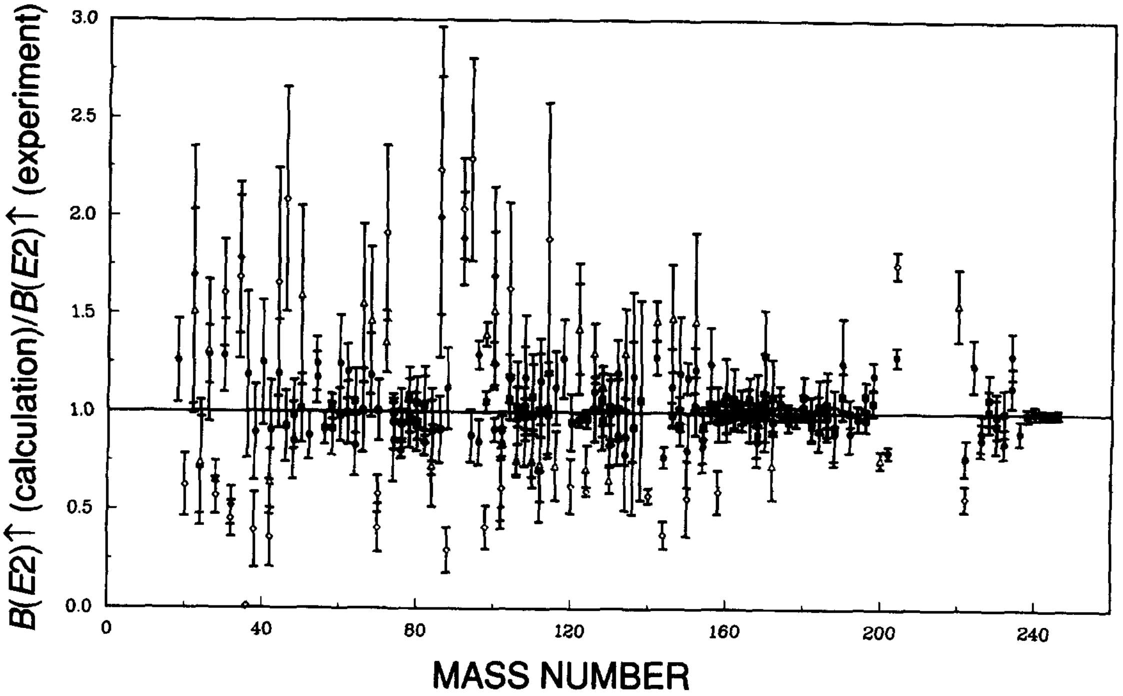


FIGURE I.6. Test of Eqs. (11) and (2)
See page 13 for Explanation of Figures

Regional From $\beta_2/\beta_{2(sp)}$ Fit

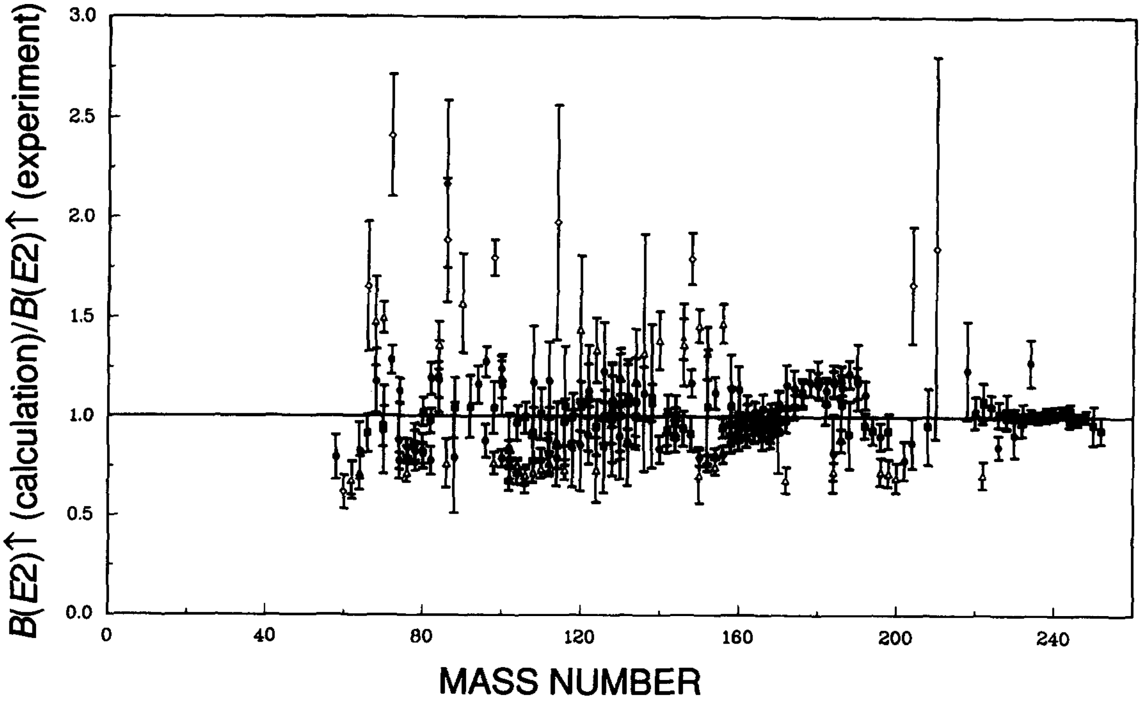


FIGURE I.7. Test of Eq. (13)
See page 13 for Explanation of Figures

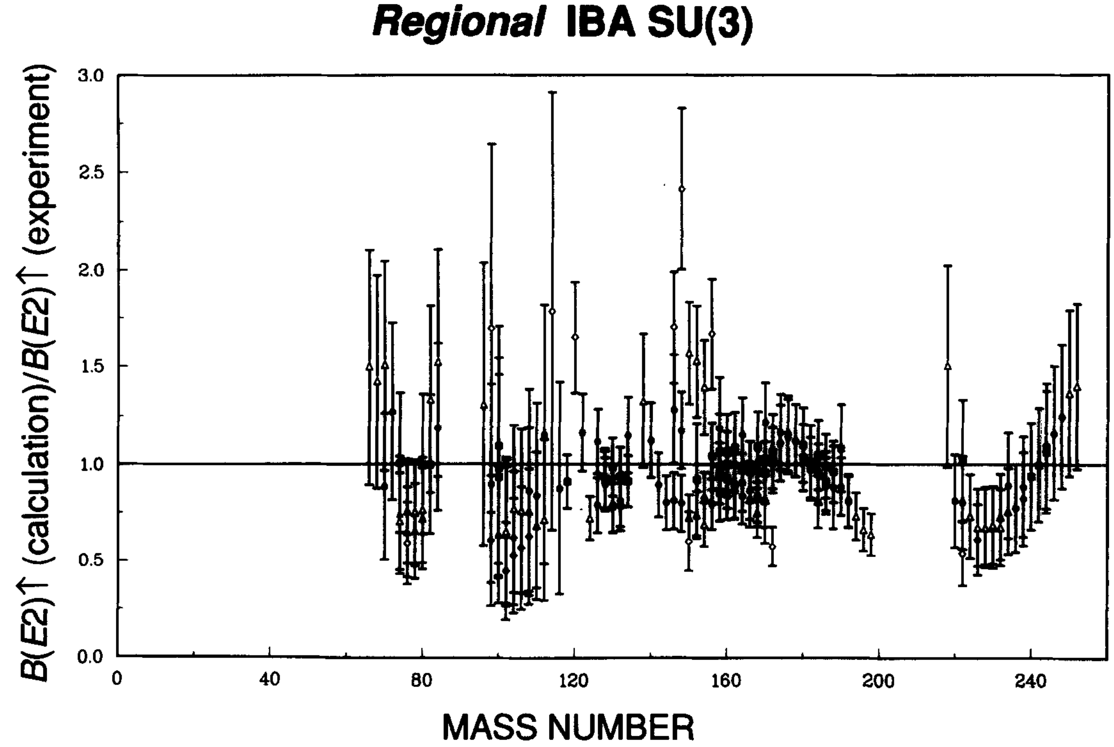


FIGURE I.8. Test of Eq. (14)
See page 13 for Explanation of Figures

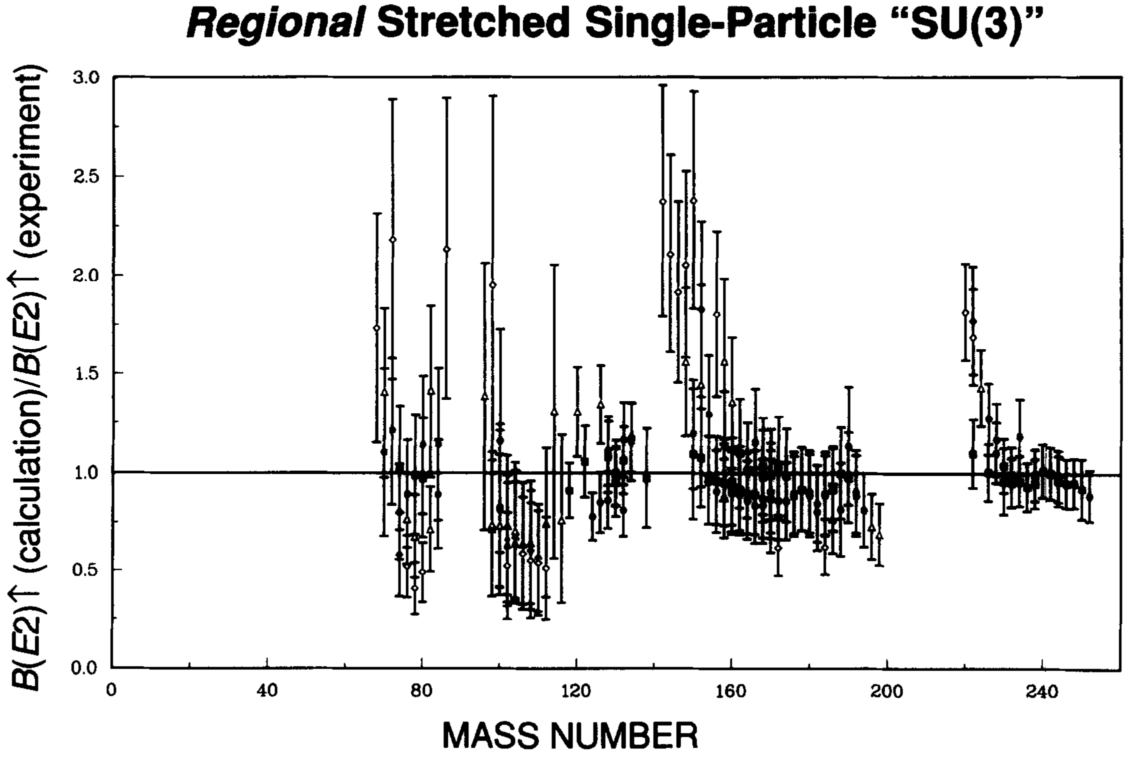


FIGURE I.9. Test of Eq. (15)
See page 13 for Explanation of Figures

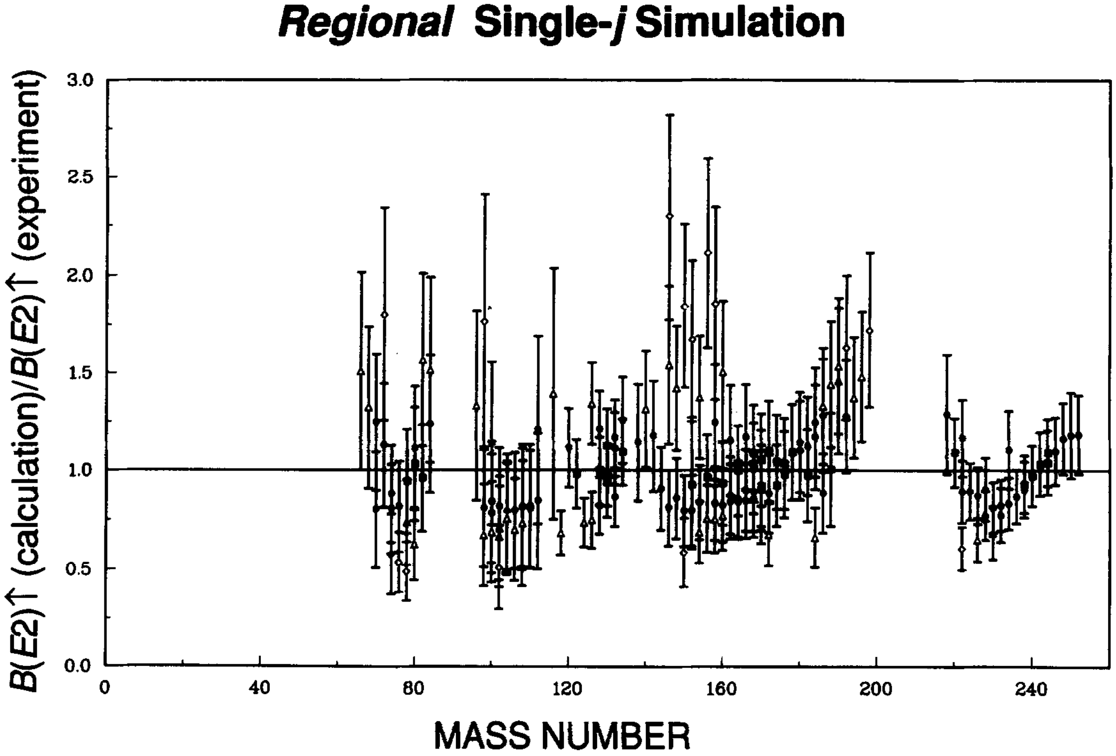


FIGURE I.10. Test of the Global Calculations of Ref. 11
See page 13 for Explanation of Figures

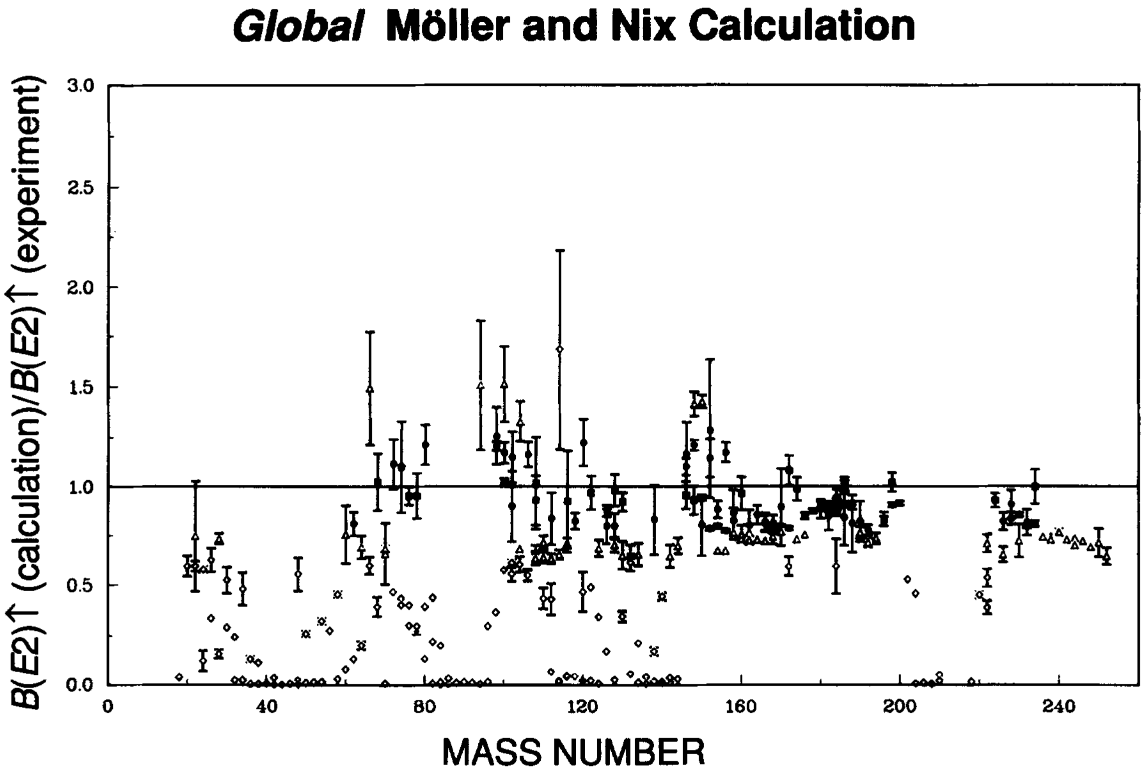


FIGURE II.1. Comparison between Predicted and Experimental $B(E2)\uparrow$ Values for Krypton and Ruthenium Isotopes

See page 13 for Explanation of Figures

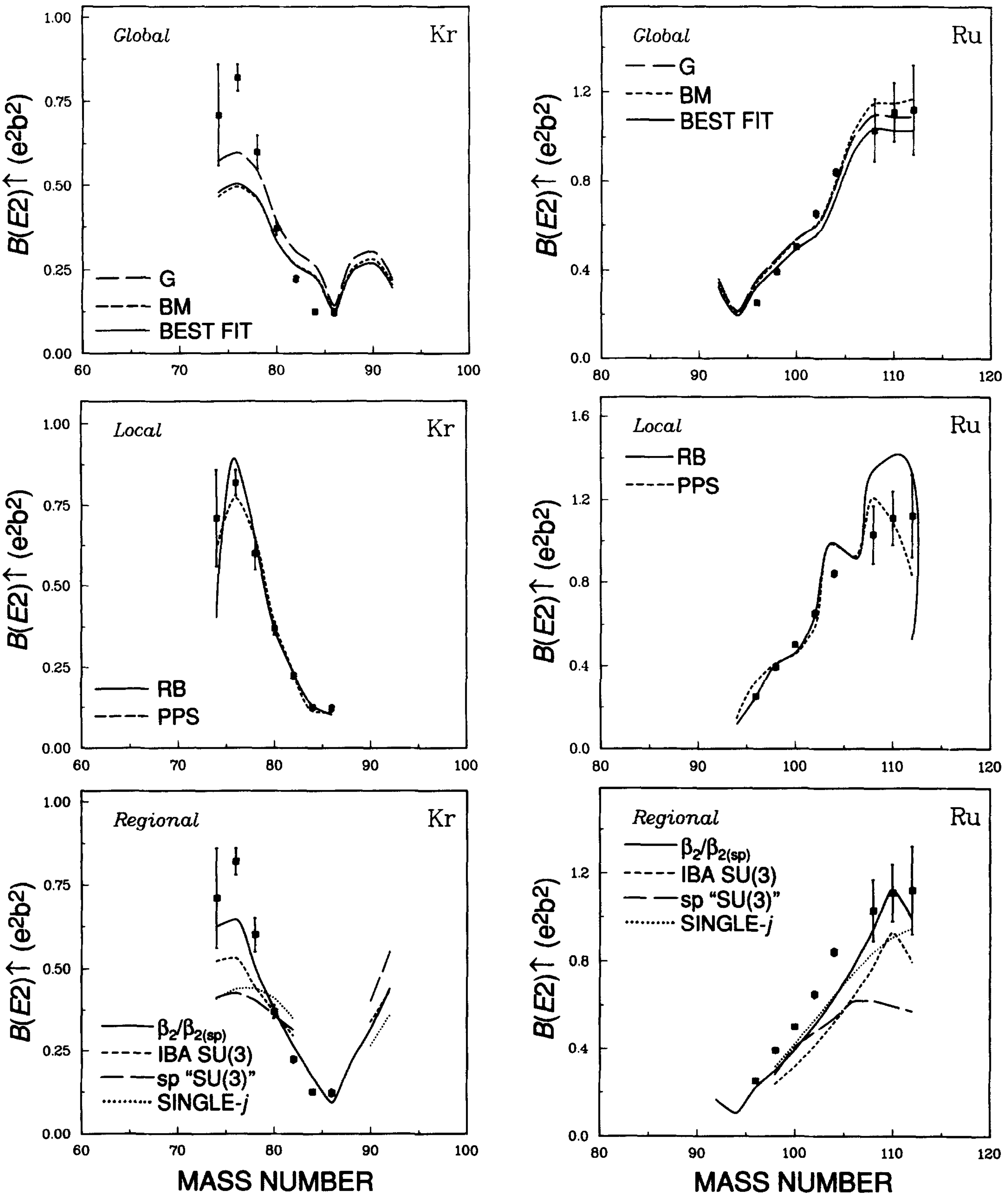
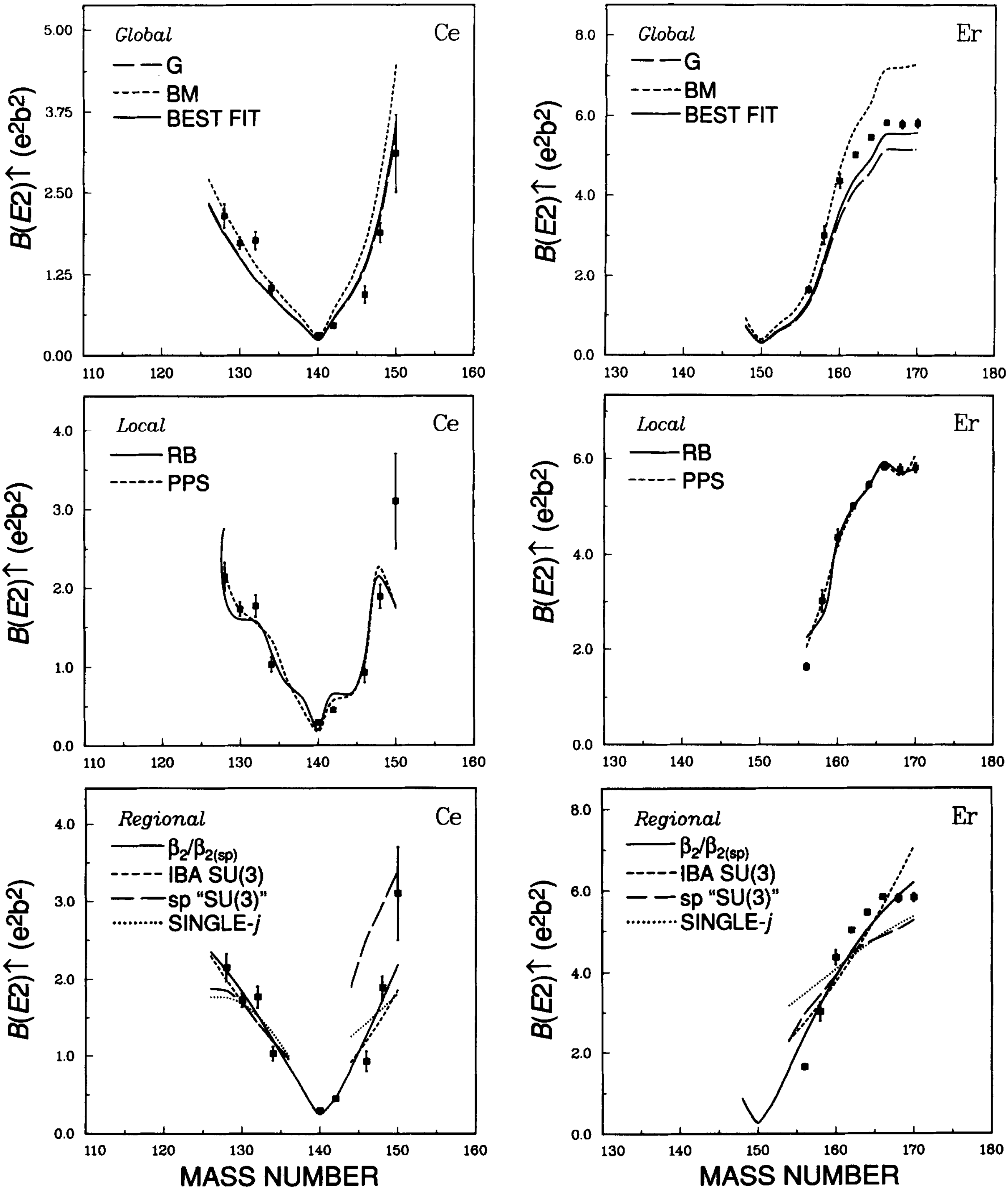


FIGURE II.2. Comparison between Predicted and Experimental $B(E2)\uparrow$ Values for Cerium and Erbium Isotopes

See page 13 for Explanation of Figures



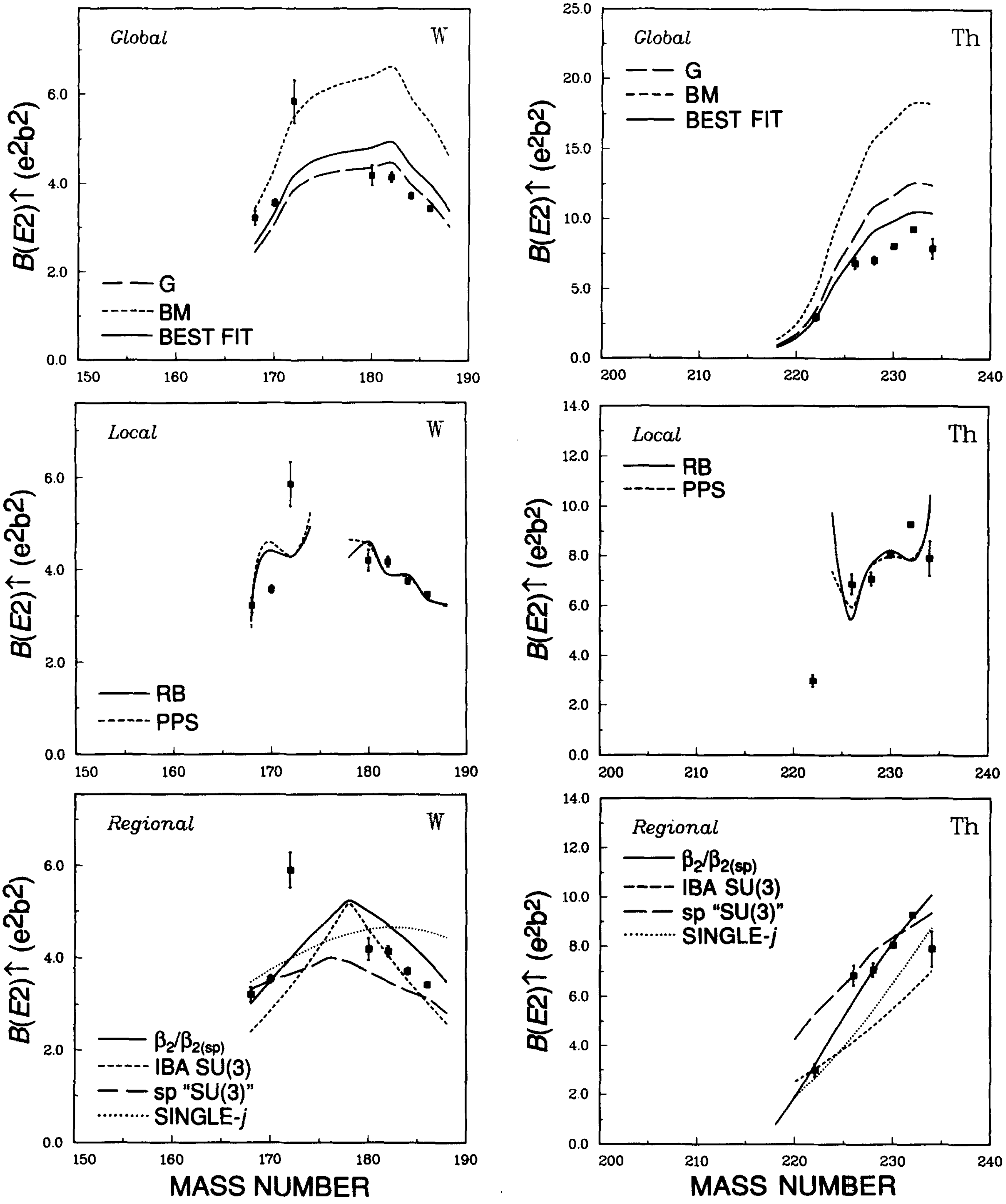


FIGURE II.3. Comparison between Predicted and Experimental $B(E2)\uparrow$ Values for Tungsten and Thorium Isotopes

See page 13 for Explanation of Figures

TABLE I. Predicted Values of $B(E2)\uparrow$ in Units of (e^2b^2)
See page 16 for Explanation of Tables

Nucleus	E(level) (keV)	Measured Value	Global Systematics Bohr and Mottelson	Global Systematics Grodzins	Global Systematics Best Fit	Local Systematics Ross and Bhaduri	Local Systematics Patnaik *et al.*
^{6}He	1797. *25*		0.00084 *34*	0.0055 *18*	0.0021 *8*		
^{8}He	2600. *200*		0.00053 *22*	0.0029 *10*	0.00120 *39*		
^{6}Be	1670. *50*		0.0036 *15*	0.024 *8*	0.0091 *36*		
^{8}Be	3040. *30*		0.0018 *7*	0.0098 *32*	0.0041 *13*	0.0065 *16*	0.0073 *13*
^{10}Be	3368.0 *2*	0.0052 *6*	0.0015 *6*	0.0071 *24*	0.0032 *9*		
^{10}C	3352.7 *15*	0.0062 *10*	0.0034 *14*	0.016 *5*	0.0072 *20*		
^{12}C	4438.9 *3*	0.0041 *5*	0.0024 *10*	0.0101 *33*	0.0048 *12*		
^{14}C	7012. *5*	0.00187 *25*	0.0015 *6*	0.0055 *18*	0.0027 *6*		
^{16}C	1766. *10*		0.0056 *23*	0.019 *6*	0.0098 *23*		
^{18}C	1620. *20*		0.0058 *24*	0.018 *6*	0.0099 *22*		
^{14}O	6590. *10*		0.0028 *11*	0.0103 *34*	0.0052 *12*		
^{16}O	6917.1 *6*	0.0040 *4*	0.0025 *10*	0.0086 *29*	0.0045 *10*	0.00127 *17*	
^{18}O	1982.2 *3*	0.00451 *20*	0.0085 *35*	0.027 *9*	0.0144 *30*	0.0044 *6*	0.0126 *18*
^{20}O	1673.68 *15*	0.0028 *2*	0.0097 *40*	0.028 *9*	0.0159 *32*	0.0047 *5*	
^{18}Ne	1887.3 *2*	0.0266 *25*	0.014 *6*	0.044 *15*	0.024 *5*		0.0335 *47*
^{20}Ne	1633.67 *2*	0.034 *3*	0.016 *6*	0.046 *15*	0.025 *5*	0.0089 *25*	0.021 *5*
^{22}Ne	1274.5 *1*	0.023 *1*	0.019 *8*	0.053 *18*	0.030 *6*	0.0143 *49*	0.035 *12*
^{24}Ne	1980.8 *10*	0.014 *6*	0.0120 *49*	0.031 *10*	0.0185 *32*	0.0143 *10*	0.0103 *7*
^{22}Mg	1246.0 *5*	0.032 *12*	0.028 *12*	0.078 *26*	0.045 *9*	1.00 *10*	0.054 *6*
^{24}Mg	1368.6 *1*	0.0432 *12*	0.025 *10*	0.065 *22*	0.038 *7*	0.030 *10*	0.031 *11*
^{26}Mg	1808.7 *1*	0.0305 *13*	0.018 *8*	0.046 *15*	0.0275 *46*	0.031 *8*	0.040 *11*
^{28}Mg	1472.5 *6*	0.034 *5*	0.022 *9*	0.052 *17*	0.032 *5*	0.0313 *23*	0.0194 *14*
^{30}Mg	1482.8 *5*		0.022 *9*	0.048 *16*	0.0304 *47*	0.038 *10*	0.040 *7*
^{32}Mg	885.8 *7*		0.035 *14*	0.076 *25*	0.049 *8*		
^{26}Si	1795.9 *2*	0.0352 *34*	0.025 *10*	0.062 *21*	0.038 *6*	0.0347 *22*	0.0453 *28*
^{28}Si	1778.9 *1*	0.0326 *12*	0.025 *10*	0.059 *20*	0.036 *6*	0.0301 *42*	0.0213 *30*
^{30}Si	2235.5 *3*	0.0215 *10*	0.019 *8*	0.044 *14*	0.0275 *43*	0.0278 *46*	0.034 *6*
^{32}Si	1941.4 *3*	0.028 *5*	0.022 *9*	0.047 *16*	0.0303 *45*	0.0184 *16*	0.0127 *11*
^{30}S	2210.7 *5*	0.032 *4*	0.026 *10*	0.058 *19*	0.036 *6*	0.0397 *29*	0.0411 *30*
^{32}S	2230.2 *2*	0.0300 *13*	0.025 *10*	0.053 *18*	0.034 *5*	0.0194 *36*	0.0156 *29*
^{34}S	2127.4 *2*	0.0212 *12*	0.026 *10*	0.053 *18*	0.035 *5*	0.042 *10*	0.036 *8*
^{36}S	3291.0 *6*	0.0096 *26*	0.016 *7*	0.032 *11*	0.0215 *37*	0.0071 *11*	0.00010 *2*
^{38}S	1296.2 *4*		0.040 *16*	0.077 *26*	0.053 *7*	0.046 *26*	0.0297 *48*
^{34}Ar	2090.0 *7*	0.024 *4*	0.033 *13*	0.068 *23*	0.045 *7*	0.062 *8*	0.043 *6*
^{36}Ar	1970.39 *5*	0.034 *4*	0.034 *14*	0.068 *23*	0.046 *6*	0.022 *7*	0.040 *14*
^{38}Ar	2167.60 *5*	0.0129 *10*	0.031 *12*	0.059 *20*	0.040 *6*	0.015 *5*	0.0115 *30*
^{40}Ar	1460.81 *4*	0.0330 *39*	0.045 *18*	0.083 *27*	0.057 *7*	0.033 *7*	0.041 *9*
^{42}Ar	1208.2 *3*	0.042 *10*	0.053 *22*	0.095 *32*	0.067 *8*	0.035 *5*	0.038 *5*
^{38}Ca	2213. *2*	0.078 *34*	0.037 *15*	0.071 *24*	0.048 *7*	0.077 *17*	0.031 *7*
^{40}Ca	3904.4 *2*	0.0096 *16*	0.021 *8*	0.038 *13*	0.0263 *50*	0.0117 *42*	0.047 *17*
^{42}Ca	1524.2 *5*	0.042 *3*	0.052 *21*	0.093 *31*	0.065 *8*	0.030 *9*	0.027 *7*

TABLE I. Predicted Values of $B(E2)\uparrow$ in Units of (e^2b^2)
See page 16 for Explanation of Tables

Nucleus	E(level) (keV)	Measured Value	Regional Systematics				Global
			$\beta_2/\beta_{2(sp)}$ Fit	IBA SU(3)	Stretched sp. "SU(3)"	Single-*j* Simulation	Calculation Möller and Nix
^{6}He	1797. *25*						
^{8}He	2600. *200*						
^{6}Be	1670. *50*						
^{8}Be	3040. *30*						
^{10}Be	3368.0 *2*	0.0052 *6*					
^{10}C	3352.7 *15*	0.0062 *10*					
^{12}C	4438.9 *3*	0.0041 *5*					
^{14}C	7012. *5*	0.00187 *25*					
^{16}C	1766. *10*						
^{18}C	1620. *20*						
^{14}O	6590. *10*						
^{16}O	6917.1 *6*	0.0040 *4*					
^{18}O	1982.2 *3*	0.00451 *20*					
^{20}O	1673.68 *15*	0.0028 *2*					
^{18}Ne	1887.3 *2*	0.0266 *25*					
^{20}Ne	1633.67 *2*	0.034 *3*					0.020
^{22}Ne	1274.5 *1*	0.023 *1*					0.014
^{24}Ne	1980.8 *10*	0.014 *6*					0.0017
^{22}Mg	1246.0 *5*	0.032 *12*					0.024
^{24}Mg	1368.6 *1*	0.0432 *12*					0.025
^{26}Mg	1808.7 *1*	0.0305 *13*					0.010
^{28}Mg	1472.5 *6*	0.034 *5*					0.0053
^{30}Mg	1482.8 *5*						
^{32}Mg	885.8 *7*						0.029
^{26}Si	1795.9 *2*	0.0352 *34*					0.022
^{28}Si	1778.9 *1*	0.0326 *12*					0.024
^{30}Si	2235.5 *3*	0.0215 *10*					0.0062
^{32}Si	1941.4 *3*	0.028 *5*					
^{30}S	2210.7 *5*	0.032 *4*					0.017
^{32}S	2230.2 *2*	0.0300 *13*					0.0073
^{34}S	2127.4 *2*	0.0212 *12*					
^{36}S	3291.0 *6*	0.0096 *26*					
^{38}S	1296.2 *4*						0.0096
^{34}Ar	2090.0 *7*	0.024 *4*					0.012
^{36}Ar	1970.39 *5*	0.034 *4*					0.0044
^{38}Ar	2167.60 *5*	0.0129 *10*					0.0014
^{40}Ar	1460.81 *4*	0.0330 *39*					
^{42}Ar	1208.2 *3*	0.042 *10*					0.0014
^{38}Ca	2213. *2*	0.078 *34*					
^{40}Ca	3904.4 *2*	0.0096 *16*					
^{42}Ca	1524.2 *5*	0.042 *3*					

TABLE I. Predicted Values of $B(E2)\uparrow$ in Units of (e^2b^2)

See page 16 for Explanation of Tables

Nucleus	E(level) (keV)	Measured Value	Global Systematics			Local Systematics	
			Bohr and Mottelson	Grodzins	Best Fit	Ross and Bhaduri	Patnaik *et al.*
^{44}Ca	1156.95 *10*	0.047 *2*	0.067 *28*	0.117 *39*	0.083 *10*	0.039 *9*	0.056 *13*
^{46}Ca	1346.0 *3*	0.0181 *13*	0.057 *23*	0.096 *32*	0.069 *8*	0.034 *9*	0.038 *10*
^{48}Ca	3831.7 *1*	0.0084 *28*	0.020 *8*	0.032 *11*	0.0237 *47*	0.0053 *9*	
^{50}Ca	1026. *6*		0.073 *30*	0.116 *39*	0.086 *9*		
^{52}Ca	2563. *1*		0.029 *12*	0.045 *15*	0.034 *6*		
^{42}Ti	1555. *2*	0.080 *23*	0.062 *25*	0.110 *37*	0.077 *10*	0.024 *8*	0.029 *9*
^{44}Ti	1083.18 *10*	0.061 *15*	0.087 *36*	0.15 *5*	0.108 *13*	0.102 *10*	0.101 *25*
^{46}Ti	889.2 *1*	0.095 *5*	0.104 *43*	0.18 *6*	0.127 *15*	0.074 *16*	0.088 *16*
^{48}Ti	983.4 *2*	0.072 *4*	0.093 *38*	0.15 *5*	0.112 *13*	0.039 *9*	0.061 *14*
^{50}Ti	1553.7 *2*	0.029 *4*	0.058 *24*	0.093 *31*	0.069 *9*	0.076 *19*	0.046 *12*
^{52}Ti	1047.1 *3*		0.085 *35*	0.132 *44*	0.099 *11*	0.0376 *47*	0.050 *6*
^{48}Cr	752.3 *2*	0.133 *20*	0.14 *6*	0.24 *8*	0.174 *20*	0.139 *13*	0.131 *12*
^{50}Cr	783.3 *2*	0.108 *6*	0.14 *6*	0.22 *7*	0.162 *18*	0.173 *28*	0.110 *18*
^{52}Cr	1434.06 *3*	0.066 *3*	0.074 *30*	0.115 *38*	0.086 *11*	0.042 *6*	0.058 *8*
^{54}Cr	834.83 *3*	0.087 *4*	0.12 *5*	0.19 *6*	0.144 *15*	0.107 *11*	0.102 *10*
^{56}Cr	1006.5 *4*		0.103 *42*	0.15 *5*	0.117 *12*	0.083 *6*	0.109 *7*
^{50}Fe	810. *80*		0.16 *6*	0.25 *8*	0.184 *20*		
^{52}Fe	849.5 *7*		0.15 *6*	0.23 *8*	0.171 *18*	0.092 *9*	0.104 *8*
^{54}Fe	1407.7 *4*	0.062 *5*	0.087 *36*	0.132 *44*	0.100 *12*	0.080 *6*	0.077 *6*
^{56}Fe	846.76 *2*	0.098 *4*	0.14 *6*	0.21 *7*	0.163 *16*	0.088 *7*	0.090 *7*
^{58}Fe	810.76 *2*	0.120 *4*	0.15 *6*	0.21 *7*	0.166 *16*	0.114 *16*	0.110 *16*
^{60}Fe	823.6 *3*	0.093 *18*	0.14 *6*	0.20 *7*	0.160 *16*	0.1028 *48*	0.116 *5*
^{62}Fe	876.8 *3*		0.13 *5*	0.18 *6*	0.147 *14*	0.086 *18*	0.080 *20*
^{56}Ni	2701. *3*		0.052 *21*	0.077 *26*	0.059 *10*	0.0398 *46*	0.034 *7*
^{58}Ni	1454.45 *15*	0.0695 *20*	0.096 *39*	0.138 *46*	0.107 *14*	0.0700 *39*	0.0713 *39*
^{60}Ni	1332.52 *3*	0.0933 *15*	0.103 *42*	0.146 *48*	0.114 *14*	0.086 *12*	0.092 *12*
^{62}Ni	1173.05 *8*	0.0890 *25*	0.116 *48*	0.16 *5*	0.127 *14*	0.095 *15*	0.088 *14*
^{64}Ni	1345.9 *3*	0.076 *8*	0.100 *41*	0.136 *45*	0.108 *14*	0.076 *9*	0.080 *9*
^{66}Ni	1422. *10*		0.094 *38*	0.124 *41*	0.100 *13*	0.069 *10*	0.065 *20*
^{68}Ni	2200. *30*		0.060 *24*	0.078 *26*	0.064 *11*		
^{60}Zn	1004.2 *5*		0.16 *6*	0.22 *7*	0.174 *18*	0.096 *6*	0.099 *9*
^{62}Zn	953.9 *5*	0.123 *9*	0.16 *7*	0.23 *8*	0.179 *18*	0.192 *17*	0.148 *13*
^{64}Zn	991.52 *10*	0.144 *12*	0.16 *6*	0.21 *7*	0.169 *18*	0.108 *18*	0.119 *20*
^{66}Zn	1039.37 *6*	0.135 *10*	0.15 *6*	0.20 *6*	0.158 *17*	0.149 *29*	0.136 *27*
^{68}Zn	1077.38 *5*	0.124 *15*	0.14 *6*	0.18 *6*	0.149 *17*	0.149 *20*	0.147 *20*
^{70}Zn	884.8 *2*	0.160 *14*	0.17 *7*	0.22 *7*	0.178 *18*	0.148 *19*	0.161 *20*
^{72}Zn	652.4 *3*		0.23 *9*	0.28 *9*	0.237 *20*	0.218 *20*	0.247 *16*
^{74}Zn	670. *50*		0.22 *9*	0.27 *9*	0.226 *20*		
^{66}Ge	957.4 *3*	0.096 *18*	0.18 *7*	0.24 *8*	0.195 *20*	0.151 *27*	0.149 *27*
^{68}Ge	1016.1 *1*	0.14 *2*	0.17 *7*	0.22 *7*	0.180 *19*	0.164 *35*	0.205 *44*
^{70}Ge	1039.6 *1*	0.176 *4*	0.16 *7*	0.21 *7*	0.172 *19*	0.120 *24*	0.102 *16*
^{72}Ge	834.0 *1*	0.213 *6*	0.20 *8*	0.25 *8*	0.211 *20*	0.269 *30*	0.289 *33*
^{74}Ge	595.88 *4*	0.300 *6*	0.28 *12*	0.35 *12*	0.289 *24*	0.284 *13*	0.300 *13*
^{76}Ge	562.92 *3*	0.268 *8*	0.30 *12*	0.36 *12*	0.301 *24*	0.287 *12*	0.215 *9*

TABLE I. Predicted Values of $B(E2)\uparrow$ in Units of (e^2b^2)

See page 16 for Explanation of Tables

Nucleus	E(level) (keV)	Measured Value	Regional Systematics				Global
			$\beta_2/\beta_{2(sp)}$ Fit	IBA SU(3)	Stretched sp. "SU(3)"	Single-j Simulation	Calculation Möller and Nix
^{44}Ca	1156.95 *10*	0.047 *2*					
^{46}Ca	1346.0 *3*	0.0181 *13*					
^{48}Ca	3831.7 *1*	0.0084 *28*					
^{50}Ca	1026. *6*						
^{52}Ca	2563. *1*						
^{42}Ti	1555. *2*	0.080 *23*					
^{44}Ti	1083.18 *10*	0.061 *15*					
^{46}Ti	889.2 *1*	0.095 *5*					
^{48}Ti	983.4 *2*	0.072 *4*					0.0014
^{50}Ti	1553.7 *2*	0.029 *4*					
^{52}Ti	1047.1 *3*						0.0022
^{48}Cr	752.3 *2*	0.133 *20*					0.074
^{50}Cr	783.3 *2*	0.108 *6*					0.028
^{52}Cr	1434.06 *3*	0.066 *3*					
^{54}Cr	834.83 *3*	0.087 *4*					0.028
^{56}Cr	1006.5 *4*						0.043
^{50}Fe	810. *80*						0.029
^{52}Fe	849.5 *7*						0.021
^{54}Fe	1407.7 *4*	0.062 *5*					
^{56}Fe	846.76 *2*	0.098 *4*					0.027
^{58}Fe	810.76 *2*	0.120 *4*					0.054
^{60}Fe	823.6 *3*	0.093 *18*					0.070
^{62}Fe	876.8 *3*						0.049
^{56}Ni	2701. *3*		0.052 *7*				
^{58}Ni	1454.45 *15*	0.0695 *20*	0.055 *8*				0.0019
^{60}Ni	1332.52 *3*	0.0933 *15*	0.058 *8*				0.0073
^{62}Ni	1173.05 *8*	0.0890 *25*	0.060 *8*				0.012
^{64}Ni	1345.9 *3*	0.076 *8*	0.063 *9*				0.015
^{66}Ni	1422. *10*		0.065 *9*				0.0032
^{68}Ni	2200. *30*		0.068 *9*				
^{60}Zn	1004.2 *5*		0.069 *8*				0.064
^{62}Zn	953.9 *5*	0.123 *9*	0.085 *8*				0.099
^{64}Zn	991.52 *10*	0.144 *12*	0.103 *9*				0.099
^{66}Zn	1039.37 *6*	0.135 *10*	0.123 *9*				0.081
^{68}Zn	1077.38 *5*	0.124 *15*	0.146 *10*				0.049
^{70}Zn	884.8 *2*	0.160 *14*	0.152 *10*				
^{72}Zn	652.4 *3*		0.138 *10*				0.0040
^{74}Zn	670. *50*		0.125 *11*				0.036
^{66}Ge	957.4 *3*	0.096 *18*	0.159 *9*	0.14 *5*	0.23 *7*	0.145 *40*	0.143
^{68}Ge	1016.1 *1*	0.14 *2*	0.207 *10*	0.20 *7*	0.24 *7*	0.18 *5*	0.143
^{70}Ge	1039.6 *1*	0.176 *4*	0.264 *12*	0.26 *9*	0.25 *8*	0.22 *6*	0.120
^{72}Ge	834.0 *1*	0.213 *6*	0.274 *13*	0.27 *10*	0.26 *8*	0.24 *7*	0.099
^{74}Ge	595.88 *4*	0.300 *6*	0.232 *12*	0.21 *8*	0.24 *7*	0.24 *7*	0.120
^{76}Ge	562.92 *3*	0.268 *8*	0.192 *11*	0.16 *6*	0.20 *6*	0.22 *6*	0.081

TABLE I. Predicted Values of $B(E2)\uparrow$ in Units of (e^2b^2)
See page 16 for Explanation of Tables

			Global Systematics			Local Systematics	
Nucleus	E(level) (keV)	Measured Value	Bohr and Mottelson	Grodzins	Best Fit	Ross and Bhaduri	Patnaik *et al.*
^{78}Ge	619.1 *10*		0.27 *11*	0.32 *10*	0.268 *22*	0.210 *8*	0.186 *13*
^{80}Ge	659.4 *10*		0.25 *10*	0.29 *10*	0.248 *22*		
^{82}Ge	1348.1 *2*		0.120 *49*	0.138 *46*	0.119 *18*		
^{70}Se	945.4 *3*	0.34 *8*	0.20 *8*	0.26 *9*	0.214 *22*	0.129 *24*	0.139 *26*
^{72}Se	862.0 *3*	0.175 *20*	0.22 *9*	0.28 *9*	0.230 *23*	0.36 *7*	0.33 *7*
^{74}Se	634.78 *8*	0.387 *8*	0.30 *12*	0.37 *12*	0.306 *26*	0.300 *44*	0.37 *5*
^{76}Se	559.10 *3*	0.42 *1*	0.34 *14*	0.40 *14*	0.342 *28*	0.424 *33*	0.393 *30*
^{78}Se	613.8 *1*	0.335 *9*	0.30 *12*	0.36 *12*	0.306 *26*	0.330 *25*	0.326 *25*
^{80}Se	666.4 *1*	0.253 *6*	0.28 *11*	0.32 *11*	0.277 *24*	0.267 *20*	0.235 *17*
^{82}Se	654.4 *1*	0.184 *5*	0.28 *11*	0.32 *11*	0.277 *24*	0.166 *12*	0.155 *11*
^{84}Se	1455.1 *2*		0.12 *5*	0.141 *47*	0.123 *19*	0.154 *22*	0.181 *13*
^{86}Se	704. *1*		0.26 *10*	0.28 *9*	0.249 *24*		
^{74}Kr	455.7 *4*	0.71 *15*	0.47 *19*	0.57 *19*	0.479 *40*	0.40 *5*	0.61 *8*
^{76}Kr	423.8 *3*	0.82 *4*	0.50 *20*	0.60 *20*	0.505 *42*	0.89 *16*	0.77 *14*
^{78}Kr	455.3 *3*	0.60 *5*	0.46 *19*	0.54 *18*	0.462 *37*	0.65 *7*	0.65 *7*
^{80}Kr	616.2 *5*	0.37 *2*	0.34 *14*	0.39 *13*	0.335 *28*	0.368 *42*	0.387 *44*
^{82}Kr	776.49 *3*	0.223 *10*	0.26 *11*	0.30 *10*	0.262 *26*	0.229 *32*	0.230 *32*
^{84}Kr	881.5 *1*	0.125 *6*	0.23 *9*	0.26 *9*	0.227 *25*	0.130 *21*	0.113 *18*
^{86}Kr	1564.6 *1*	0.122 *10*	0.13 *5*	0.143 *48*	0.126 *21*	0.102 *17*	0.111 *18*
^{88}Kr	775.3 *2*		0.26 *11*	0.28 *9*	0.250 *26*		
^{90}Kr	707.1 *3*		0.28 *12*	0.30 *10*	0.270 *26*		
^{92}Kr	956. *5*		0.21 *8*	0.22 *7*	0.196 *25*		
^{78}Sr	278. *2*	1.07 *13*	0.84 *34*	0.99 *33*	0.84 *9*	1.56 *20*	1.06 *14*
^{80}Sr	385.4 *3*	0.84 *7*	0.60 *24*	0.70 *23*	0.598 *49*	0.76 *10*	0.80 *11*
^{82}Sr	573.4 *3*	0.513 *20*	0.40 *16*	0.46 *15*	0.395 *32*	0.71 *13*	0.53 *10*
^{84}Sr	793.1 *2*	0.28 *4*	0.29 *12*	0.32 *11*	0.281 *28*	0.162 *40*	0.20 *5*
^{86}Sr	1076.63 *10*	0.106 *16*	0.21 *8*	0.23 *8*	0.204 *26*	0.140 *33*	0.24 *7*
^{88}Sr	1836.04 *4*	0.092 *5*	0.122 *50*	0.133 *44*	0.117 *22*	0.063 *19*	0.103 *18*
^{90}Sr	831.69 *6*		0.27 *11*	0.29 *10*	0.255 *28*	0.104 *10*	0.112 *9*
^{92}Sr	814.7 *1*		0.27 *11*	0.29 *10*	0.257 *29*		
^{94}Sr	836.87 *10*		0.26 *11*	0.27 *9*	0.246 *29*		
^{96}Sr	815.5 *5*		0.27 *11*	0.28 *9*	0.249 *29*		
^{98}Sr	144.2 *2*	0.97 *11*	1.5 *6*	1.5 *5*	1.39 *18*	0.85 *20*	0.40 *10*
^{100}Sr	129.2 *5*	1.10 *5*	1.6 *7*	1.7 *6*	1.53 *21*	1.28 *33*	1.67 *43*
^{82}Zr	407.0 *5*		0.62 *25*	0.71 *24*	0.616 *48*	0.62 *6*	0.76 *8*
^{84}Zr	540.0 *5*	0.437 *24*	0.46 *19*	0.52 *17*	0.457 *36*	0.26 *6*	0.39 *9*
^{86}Zr	751.9 *2*	0.16 *3*	0.33 *14*	0.37 *12*	0.323 *32*	0.249 *39*	0.32 *10*
^{88}Zr	1056.9 *5*	0.26 *9*	0.23 *10*	0.26 *8*	0.226 *30*	0.083 *20*	0.077 *14*
^{90}Zr	2186.2 *4*	0.063 *5*	0.112 *46*	0.121 *40*	0.108 *22*	0.062 *17*	0.25 *9*
^{92}Zr	934.46 *7*	0.083 *6*	0.26 *11*	0.28 *9*	0.248 *31*	0.091 *15*	0.169 *17*
^{94}Zr	918.24 *23*	0.066 *14*	0.26 *11*	0.28 *9*	0.249 *31*	0.091 *7*	0.151 *12*
^{96}Zr	1750.7 *4*		0.14 *6*	0.142 *47*	0.129 *25*	0.034 *7*	0.062 *16*
^{98}Zr	1222.8 *2*		0.20 *8*	0.20 *7*	0.181 *29*	0.144 *19*	0.36 *16*
^{100}Zr	212.7 *3*	0.90 *11*	1.11 *46*	1.12 *37*	1.03 *9*	1.40 *33*	1.52 *36*
^{102}Zr	151.9 *3*	1.60 *32*	1.6 *6*	1.5 *5*	1.42 *17*	1.10 *20*	0.98 *17*
^{104}Zr	140.1 *10*		1.7 *7*	1.6 *5*	1.52 *19*	1.89 *46*	1.82 *34*

TABLE I. Predicted Values of $B(E2)\uparrow$ in Units of (e^2b^2)
See page 16 for Explanation of Tables

			Regional Systematics				Global
Nucleus	E(level) (keV)	Measured Value	$\beta_2/\beta_{2(sp)}$ Fit	IBA SU(3)	Stretched sp. "SU(3)"	Single-j Simulation	Calculation Möller and Nix
^{78}Ge	619.1 *10*		0.154 *11*	0.112 *40*	0.17 *5*	0.173 *48*	0.081
^{80}Ge	659.4 *10*		0.119 *12*				0.049
^{82}Ge	1348.1 *2*		0.087 *12*				0.0040
^{70}Se	945.4 *3*	0.34 *8*	0.317 *15*	0.30 *11*	0.37 *11*	0.27 *8*	0.224
^{72}Se	862.0 *3*	0.175 *20*	0.421 *22*	0.38 *14*	0.38 *12*	0.31 *9*	0.195
^{74}Se	634.78 *8*	0.387 *8*	0.437 *23*	0.39 *14*	0.40 *12*	0.34 *10*	0.168
^{76}Se	559.10 *3*	0.42 *1*	0.354 *17*	0.32 *11*	0.37 *11*	0.34 *10*	0.168
^{78}Se	613.8 *1*	0.335 *9*	0.276 *13*	0.25 *9*	0.33 *10*	0.32 *9*	0.099
^{80}Se	666.4 *1*	0.253 *6*	0.205 *12*	0.19 *7*	0.29 *9*	0.26 *7*	0.099
^{82}Se	654.4 *1*	0.184 *5*	0.143 *12*				0.081
^{84}Se	1455.1 *2*		0.090 *12*				0.0090
^{86}Se	704. *1*		0.190 *16*				0.049
^{74}Kr	455.7 *4*	0.71 *15*	0.623 *39*	0.52 *19*	0.41 *12*	0.41 *11*	0.780
^{76}Kr	423.8 *3*	0.82 *4*	0.646 *40*	0.53 *19*	0.43 *13*	0.44 *12*	0.780
^{78}Kr	455.3 *3*	0.60 *5*	0.506 *28*	0.45 *16*	0.40 *12*	0.44 *12*	0.168
^{80}Kr	616.2 *5*	0.37 *2*	0.378 *18*	0.37 *13*	0.36 *11*	0.41 *12*	0.049
^{82}Kr	776.49 *3*	0.223 *10*	0.266 *13*	0.30 *11*	0.31 *10*	0.35 *10*	0.049
^{84}Kr	881.5 *1*	0.125 *6*	0.170 *13*				0.025
^{86}Kr	1564.6 *1*	0.122 *10*	0.093 *13*				0.0040
^{88}Kr	775.3 *2*		0.216 *17*				0.025
^{90}Kr	707.1 *3*		0.317 *18*	0.34 *19*	0.40 *20*	0.27 *10*	0.120
^{92}Kr	956. *5*		0.441 *20*	0.43 *24*	0.55 *27*	0.36 *13*	0.287
^{78}Sr	278. *2*	1.07 *13*	0.90 *6*	0.70 *25*	0.43 *13*	0.52 *14*	1.02
^{80}Sr	385.4 *3*	0.84 *7*	0.692 *43*	0.60 *22*	0.41 *12*	0.52 *15*	1.02
^{82}Sr	573.4 *3*	0.513 *20*	0.501 *26*	0.51 *18*	0.36 *11*	0.49 *14*	0.0040
^{84}Sr	793.1 *2*	0.28 *4*	0.336 *16*	0.42 *15*	0.32 *10*	0.42 *12*	0.0040
^{86}Sr	1076.63 *10*	0.106 *16*	0.200 *13*				0.0040
^{88}Sr	1836.04 *4*	0.092 *5*	0.096 *13*				
^{90}Sr	831.69 *6*		0.244 *17*				0.0090
^{92}Sr	814.7 *1*		0.381 *19*	0.49 *27*	0.41 *20*	0.33 *12*	0.064
^{94}Sr	836.87 *10*		0.554 *25*	0.60 *34*	0.56 *27*	0.43 *16*	0.481
^{96}Sr	815.5 *5*		0.763 *38*	0.73 *41*	0.64 *31*	0.54 *20*	1.02
^{98}Sr	144.2 *2*	0.97 *11*	1.01 *6*	0.87 *49*	0.71 *35*	0.65 *24*	1.22
^{100}Sr	129.2 *5*	1.10 *5*	1.30 *8*	1.0 *6*	0.80 *39*	0.76 *28*	1.29
^{82}Zr	407.0 *5*		0.715 *45*	0.61 *22*	0.44 *13*	0.58 *16*	0.195
^{84}Zr	540.0 *5*	0.437 *24*	0.518 *27*	0.52 *18*	0.39 *12*	0.54 *15*	
^{86}Zr	751.9 *2*	0.16 *3*	0.347 *16*	0.43 *15*	0.34 *10*	0.47 *13*	
^{88}Zr	1056.9 *5*	0.26 *9*	0.206 *13*				
^{90}Zr	2186.2 *4*	0.063 *5*	0.099 *14*				
^{92}Zr	934.46 *7*	0.083 *6*	0.252 *18*				
^{94}Zr	918.24 *23*	0.066 *14*	0.392 *19*	0.49 *28*	0.43 *21*	0.36 *13*	0.099
^{96}Zr	1750.7 *4*		0.569 *26*	0.61 *34*	0.58 *28*	0.47 *17*	0.398
^{98}Zr	1222.8 *2*		0.784 *39*	0.74 *41*	0.66 *32*	0.59 *21*	1.08
^{100}Zr	212.7 *3*	0.90 *11*	1.04 *6*	0.88 *49*	0.74 *36*	0.70 *26*	1.36
^{102}Zr	151.9 *3*	1.60 *32*	1.34 *8*	1.0 *6*	0.84 *41*	0.81 *30*	1.44
^{104}Zr	140.1 *10*		1.68 *12*	1.2 *7*	0.84 *41*	0.91 *33*	1.44

TABLE I. Predicted Values of $B(E2)\uparrow$ in Units of (e^2b^2)

See page 16 for Explanation of Tables

Nucleus	E(level) (keV)	Measured Value	Global Systematics			Local Systematics	
			Bohr and Mottelson	Grodzins	Best Fit	Ross and Bhaduri	Patnaik *et al.*
^{88}Mo	932. *2*		0.29 *12*	0.32 *11*	0.283 *34*		
^{90}Mo	947.9 *10*		0.28 *12*	0.31 *10*	0.274 *34*	0.33 *15*	0.29 *9*
^{92}Mo	1509.47 *3*	0.097 *6*	0.18 *7*	0.19 *6*	0.169 *29*	29.6 *32*	0.183 *20*
^{94}Mo	871.10 *2*	0.203 *4*	0.31 *12*	0.32 *11*	0.289 *35*	0.179 *27*	0.178 *27*
^{96}Mo	778.26 *4*	0.271 *5*	0.34 *14*	0.35 *12*	0.319 *36*	0.203 *28*	0.229 *31*
^{98}Mo	787.42 *10*	0.267 *5*	0.33 *14*	0.34 *11*	0.311 *36*	0.295 *12*	0.373 *14*
^{100}Mo	535.55 *2*	0.516 *10*	0.49 *20*	0.49 *16*	0.450 *39*	0.506 *44*	0.64 *6*
^{102}Mo	296.61 *2*	1.06 *12*	0.88 *36*	0.87 *29*	0.80 *6*	0.70 *12*	0.54 *10*
^{104}Mo	192.3 *3*	1.08 *8*	1.3 *5*	1.31 *44*	1.22 *12*	2.5 *6*	1.76 *46*
^{106}Mo	171.7 *3*	1.30 *7*	1.5 *6*	1.44 *48*	1.35 *14*	1.27 *37*	1.26 *37*
^{108}Mo	172.1 *5*	1.34 *31*	1.5 *6*	1.41 *47*	1.33 *13*	1.38 *26*	1.38 *26*
^{92}Ru	865.3 *10*		0.34 *14*	0.36 *12*	0.324 *38*		
^{94}Ru	1430.7 *10*		0.20 *8*	0.21 *7*	0.193 *33*	0.117 *9*	0.145 *12*
^{96}Ru	832.55 *7*	0.251 *10*	0.35 *14*	0.36 *12*	0.327 *38*	0.249 *10*	0.324 *13*
^{98}Ru	652.41 *5*	0.392 *12*	0.44 *18*	0.45 *15*	0.412 *41*	0.406 *17*	0.412 *17*
^{100}Ru	539.59 *5*	0.501 *10*	0.53 *22*	0.54 *18*	0.491 *42*	0.460 *29*	0.455 *29*
^{102}Ru	475.07 *4*	0.651 *16*	0.60 *24*	0.60 *20*	0.550 *44*	0.64 *6*	0.58 *5*
^{104}Ru	357.99 *3*	0.841 *16*	0.79 *32*	0.78 *26*	0.72 *5*	0.99 *10*	0.98 *10*
^{106}Ru	270.07 *6*		1.04 *43*	1.01 *33*	0.94 *7*	0.917 *47*	0.924 *47*
^{108}Ru	242.3 *3*	1.03 *14*	1.15 *47*	1.10 *37*	1.04 *8*	1.34 *32*	1.21 *28*
^{110}Ru	240.8 *3*	1.11 *13*	1.15 *47*	1.09 *36*	1.03 *8*	0.89 *22*	1.09 *32*
^{112}Ru	236.8 *3*	1.12 *20*	1.17 *48*	1.09 *36*	1.03 *8*	0.53 *19*	0.82 *29*
^{96}Pd	1415.4 *3*		0.22 *9*	0.23 *8*	0.210 *36*		
^{98}Pd	863.1 *2*		0.36 *15*	0.37 *12*	0.340 *42*		
^{100}Pd	665.3 *5*		0.47 *19*	0.47 *16*	0.435 *44*	0.365 *26*	0.351 *34*
^{102}Pd	556.60 *4*	0.46 *3*	0.56 *23*	0.56 *18*	0.513 *46*	0.469 *34*	0.385 *28*
^{104}Pd	555.81 *4*	0.535 *35*	0.56 *23*	0.54 *18*	0.507 *47*	0.569 *42*	0.571 *42*
^{106}Pd	511.85 *3*	0.656 *35*	0.60 *25*	0.58 *19*	0.543 *48*	0.588 *49*	0.67 *6*
^{108}Pd	433.95 *4*	0.76 *4*	0.70 *29*	0.67 *22*	0.63 *5*	0.77 *6*	0.74 *6*
^{110}Pd	373.8 *3*	0.87 *4*	0.81 *33*	0.77 *26*	0.72 *5*	0.66 *12*	0.65 *11*
^{112}Pd	348.8 *5*	0.63 *10*	0.86 *35*	0.81 *27*	0.77 *6*	0.49 *12*	0.63 *16*
^{114}Pd	332.9 *3*	0.34 *10*	0.90 *37*	0.83 *28*	0.79 *6*	0.64 *14*	0.64 *14*
^{116}Pd	340.6 *3*	0.57 *16*	0.88 *36*	0.80 *26*	0.77 *6*		
^{102}Cd	776.8 *10*		0.44 *18*	0.43 *14*	0.400 *47*		
^{104}Cd	657.9 *10*		0.51 *21*	0.50 *17*	0.466 *49*	0.346 *30*	0.34 *5*
^{106}Cd	632.7 *3*	0.41 *2*	0.53 *22*	0.51 *17*	0.478 *50*	0.389 *38*	0.309 *30*
^{108}Cd	632.89 *5*	0.43 *2*	0.52 *22*	0.50 *17*	0.47 *5*	0.465 *43*	0.438 *40*
^{110}Cd	657.72 *2*	0.45 *2*	0.50 *20*	0.47 *16*	0.45 *5*	0.46 *7*	0.48 *7*
^{112}Cd	617.4 *3*	0.51 *2*	0.53 *22*	0.50 *16*	0.47 *5*	0.56 *10*	0.59 *11*
^{114}Cd	558.29 *3*	0.55 *2*	0.58 *24*	0.54 *18*	0.52 *5*	0.47 *8*	0.54 *12*
^{116}Cd	513.4 *1*	0.56 *2*	0.63 *26*	0.58 *19*	0.55 *5*	0.35 *8*	0.40 *10*
^{118}Cd	487.76 *7*		0.66 *27*	0.60 *20*	0.58 *5*	0.538 *30*	0.556 *22*
^{120}Cd	505.9 *2*		0.64 *26*	0.56 *19*	0.55 *5*		
^{122}Cd	570. *1*		0.56 *23*	0.49 *16*	0.48 *5*		
^{124}Cd	613.2 *2*		0.52 *21*	0.45 *15*	0.44 *5*		
^{102}Sn	1354. *2*		0.27 *11*	0.27 *9*	0.249 *43*		

TABLE I. Predicted Values of $B(E2)\uparrow$ in Units of (e^2b^2)

See page 16 for Explanation of Tables

Nucleus	E(level) (keV)	Measured Value	Regional Systematics				Global
			$\beta_2/\beta_{2(sp)}$ Fit	IBA SU(3)	Stretched sp. "SU(3)"	Single-j Simulation	Calculation Möller and Nix
^{88}Mo	932. *2*		0.292 *14*	0.31 *11*	0.28 *8*	0.47 *13*	0.0040
^{90}Mo	947.9 *10*		0.186 *14*				0.0040
^{92}Mo	1509.47 *3*	0.097 *6*	0.102 *14*				
^{94}Mo	871.10 *2*	0.203 *4*	0.236 *18*				
^{96}Mo	778.26 *4*	0.271 *5*	0.345 *19*	0.35 *20*	0.38 *18*	0.36 *13*	0.081
^{98}Mo	787.42 *10*	0.267 *5*	0.480 *22*	0.45 *25*	0.52 *25*	0.47 *17*	0.322
^{100}Mo	535.55 *2*	0.516 *10*	0.640 *29*	0.56 *32*	0.60 *29*	0.59 *21*	0.526
^{102}Mo	296.61 *2*	1.06 *12*	0.827 *41*	0.69 *38*	0.67 *33*	0.70 *26*	1.22
^{104}Mo	192.3 *3*	1.08 *8*	1.04 *6*	0.83 *46*	0.76 *37*	0.81 *30*	1.44
^{106}Mo	171.7 *3*	1.30 *7*	1.29 *8*	1.0 *6*	0.76 *37*	0.91 *33*	1.51
^{108}Mo	172.1 *5*	1.34 *31*	1.57 *10*	1.2 *6*	0.74 *36*	0.98 *36*	1.36
^{92}Ru	865.3 *10*		0.166 *14*				0.0040
^{94}Ru	1430.7 *10*		0.105 *14*				
^{96}Ru	832.55 *7*	0.251 *10*	0.220 *19*				0.0040
^{98}Ru	652.41 *5*	0.392 *12*	0.300 *19*	0.24 *13*	0.28 *14*	0.32 *12*	0.143
^{100}Ru	539.59 *5*	0.501 *10*	0.395 *20*	0.32 *18*	0.41 *20*	0.42 *15*	0.287
^{102}Ru	475.07 *4*	0.651 *16*	0.506 *23*	0.41 *23*	0.48 *23*	0.53 *19*	0.398
^{104}Ru	357.99 *3*	0.841 *16*	0.633 *29*	0.52 *29*	0.54 *26*	0.64 *23*	0.573
^{106}Ru	270.07 *6*		0.779 *37*	0.64 *36*	0.62 *30*	0.75 *27*	0.895
^{108}Ru	242.3 *3*	1.03 *14*	0.942 *48*	0.78 *43*	0.62 *30*	0.84 *31*	0.956
^{110}Ru	240.8 *3*	1.11 *13*	1.12 *6*	0.9 *5*	0.60 *29*	0.91 *33*	0.481
^{112}Ru	236.8 *3*	1.12 *20*	0.99 *5*	0.80 *44*	0.57 *28*	0.94 *34*	0.481
^{96}Pd	1415.4 *3*		0.108 *15*				
^{98}Pd	863.1 *2*		0.203 *19*				0.0090
^{100}Pd	665.3 *5*		0.256 *20*	0.14 *8*	0.20 *10*	0.23 *8*	0.099
^{102}Pd	556.60 *4*	0.46 *3*	0.316 *20*	0.20 *11*	0.30 *15*	0.32 *12*	0.255
^{104}Pd	555.81 *4*	0.535 *35*	0.384 *21*	0.28 *16*	0.36 *18*	0.42 *15*	0.322
^{106}Pd	511.85 *3*	0.656 *35*	0.461 *23*	0.37 *21*	0.42 *20*	0.52 *19*	0.359
^{108}Pd	433.95 *4*	0.76 *4*	0.546 *25*	0.47 *26*	0.49 *24*	0.62 *22*	0.481
^{110}Pd	373.8 *3*	0.87 *4*	0.640 *29*	0.59 *33*	0.49 *24*	0.70 *26*	0.622
^{112}Pd	348.8 *5*	0.63 *10*	0.744 *34*	0.72 *40*	0.47 *23*	0.76 *28*	0.526
^{114}Pd	332.9 *3*	0.34 *10*	0.671 *30*	0.61 *34*	0.44 *22*	0.80 *29*	0.573
^{116}Pd	340.6 *3*	0.57 *16*	0.600 *28*	0.50 *28*	0.43 *21*	0.79 *29*	0.526
^{102}Cd	776.8 *10*		0.214 *20*				0.036
^{104}Cd	657.9 *10*		0.244 *21*				0.120
^{106}Cd	632.7 *3*	0.41 *2*	0.277 *22*				0.224
^{108}Cd	632.89 *5*	0.43 *2*	0.312 *22*				0.287
^{110}Cd	657.72 *2*	0.45 *2*	0.350 *23*				0.287
^{112}Cd	617.4 *3*	0.51 *2*	0.390 *23*				0.322
^{114}Cd	558.29 *3*	0.55 *2*	0.434 *24*				0.359
^{116}Cd	513.4 *1*	0.56 *2*	0.409 *24*				0.398
^{118}Cd	487.76 *7*		0.384 *25*				0.359
^{120}Cd	505.9 *2*		0.359 *25*				0.255
^{122}Cd	570. *1*		0.334 *26*				0.0090
^{124}Cd	613.2 *2*		0.309 *27*				
^{102}Sn	1354. *2*		0.171 *20*				

TABLE I. Predicted Values of $B(E2)\uparrow$ in Units of (e^2b^2)
See page 16 for Explanation of Tables

Nucleus	E(level) (keV)	Measured Value	Global Systematics			Local Systematics	
			Bohr and Mottelson	Grodzins	Best Fit	Ross and Bhaduri	Patnaik *et al.*
^{104}Sn	1216.2 *10*		0.30 *12*	0.29 *10*	0.274 *45*		
^{106}Sn	1210.4 *10*		0.30 *12*	0.29 *10*	0.271 *45*		
^{108}Sn	1206.7 *10*		0.30 *12*	0.29 *9*	0.269 *46*		
^{110}Sn	1211.9 *2*		0.30 *12*	0.28 *9*	0.264 *46*	0.229 *19*	0.220 *32*
^{112}Sn	1257.2 *3*	0.240 *14*	0.28 *12*	0.26 *9*	0.252 *45*	0.22 *5*	0.170 *38*
^{114}Sn	1300.0 *1*	0.23 *5*	0.27 *11*	0.25 *8*	0.240 *44*	0.229 *17*	0.234 *17*
^{116}Sn	1293.54 *2*	0.209 *6*	0.27 *11*	0.25 *8*	0.239 *45*	0.218 *36*	0.234 *39*
^{118}Sn	1229.63 *3*	0.209 *8*	0.28 *12*	0.26 *8*	0.248 *46*	0.209 *32*	0.266 *41*
^{120}Sn	1171.24 *3*	0.202 *4*	0.30 *12*	0.26 *9*	0.257 *47*	0.199 *30*	0.192 *29*
^{122}Sn	1140.56 *3*	0.192 *4*	0.30 *12*	0.27 *9*	0.261 *47*	0.184 *5*	0.184 *5*
^{124}Sn	1131.58 *3*	0.166 *4*	0.30 *12*	0.26 *9*	0.261 *48*	0.184 *6*	0.0990 *31*
^{126}Sn	1141.2 *1*		0.30 *12*	0.26 *9*	0.255 *47*	0.1544 *42*	0.074 *12*
^{128}Sn	1168.8 *1*		0.29 *12*	0.25 *8*	0.247 *47*		
^{130}Sn	1221.24 *5*		0.28 *11*	0.24 *8*	0.234 *46*		
^{132}Sn	4040.6 *20*		0.084 *34*	0.070 *23*	0.070 *23*		
^{112}Te	689. *2*		0.56 *23*	0.52 *17*	0.50 *6*		
^{114}Te	709.0 *4*		0.54 *22*	0.50 *16*	0.48 *6*		
^{116}Te	679.0 *3*		0.56 *23*	0.51 *17*	0.49 *6*		
^{118}Te	605.2 *4*		0.63 *26*	0.56 *19*	0.54 *6*	0.63 *10*	0.70 *13*
^{120}Te	560.4 *3*	0.77 *16*	0.67 *28*	0.60 *20*	0.58 *6*	0.61 *5*	0.478 *40*
^{122}Te	564.0 *2*	0.660 *6*	0.66 *27*	0.58 *19*	0.57 *6*	0.86 *14*	0.94 *15*
^{124}Te	602.72 *4*	0.568 *6*	0.62 *25*	0.54 *18*	0.53 *6*	0.508 *27*	0.549 *26*
^{126}Te	666.2 *1*	0.475 *10*	0.56 *23*	0.48 *16*	0.47 *6*	0.454 *31*	0.524 *36*
^{128}Te	743.2 *1*	0.383 *6*	0.50 *20*	0.42 *14*	0.42 *6*	0.403 *40*	0.430 *43*
^{130}Te	839.4 *1*	0.295 *7*	0.44 *18*	0.37 *12*	0.37 *6*	0.306 *31*	0.193 *20*
^{132}Te	973.9 *1*		0.38 *15*	0.31 *10*	0.31 *6*	0.241 *37*	0.18 *7*
^{134}Te	1279.1 *10*		0.28 *12*	0.24 *8*	0.236 *49*		
^{114}Xe	449.7 *2*		0.92 *38*	0.85 *28*	0.81 *7*		
^{116}Xe	393.5 *10*		1.04 *43*	0.95 *32*	0.92 *7*		
^{118}Xe	337. *1*	1.40 *7*	1.21 *50*	1.09 *36*	1.06 *8*		
^{120}Xe	321.8 *10*	0.94 *9*	1.3 *5*	1.12 *37*	1.09 *8*		
^{122}Xe	331.3 *2*	1.12 *10*	1.22 *50*	1.07 *36*	1.05 *8*	1.98 *43*	1.60 *35*
^{124}Xe	354.1 *2*	1.49 *9*	1.13 *46*	0.99 *33*	0.97 *8*	0.94 *15*	1.06 *16*
^{126}Xe	388.5 *1*	0.770 *25*	1.03 *42*	0.89 *30*	0.88 *8*	0.96 *11*	1.00 *11*
^{128}Xe	442.91 *7*	0.75 *4*	0.90 *37*	0.77 *25*	0.76 *7*	0.78 *9*	0.80 *9*
^{130}Xe	536.09 *5*	0.65 *5*	0.74 *30*	0.62 *21*	0.62 *7*	0.58 *6*	0.54 *5*
^{132}Xe	667.67 *6*	0.46 *3*	0.59 *24*	0.49 *16*	0.49 *7*	0.50 *6*	0.55 *7*
^{134}Xe	847.03 *3*	0.34 *6*	0.46 *19*	0.38 *13*	0.38 *6*	0.29 *9*	0.27 *8*
^{136}Xe	1313.2 *5*	0.18 *8*	0.30 *12*	0.24 *8*	0.25 *5*	0.218 *39*	0.166 *30*
^{138}Xe	589.0 *3*	0.0235 *28*	0.66 *27*	0.53 *18*	0.54 *7*		
^{140}Xe	376.8 *5*	0.323 *14*	1.02 *42*	0.82 *27*	0.84 *8*		
^{142}Xe	205. *1*		1.9 *8*	1.49 *50*	1.53 *12*	0.545 *35*	0.68 *9*
^{120}Ba	183. *1*		2.4 *10*	2.1 *7*	2.07 *18*		
^{122}Ba	197. *1*		2.2 *9*	1.9 *6*	1.90 *15*		
^{124}Ba	229.5 *10*		1.9 *8*	1.6 *5*	1.61 *12*	1.52 *19*	1.53 *25*
^{126}Ba	255.8 *10*	1.90 *21*	1.7 *7*	1.45 *48*	1.43 *10*	2.12 *25*	1.93 *23*
^{128}Ba	284.1 *1*	1.36 *11*	1.5 *6*	1.28 *43*	1.27 *9*	1.30 *18*	1.30 *18*

TABLE I. Predicted Values of $B(E2)\uparrow$ in Units of (e^2b^2)

See page 16 for Explanation of Tables

			Regional Systematics				Global
Nucleus	E(level) (keV)	Measured Value	$\beta_2/\beta_{2(\mathrm{sp})}$ Fit	IBA SU(3)	Stretched sp. "SU(3)"	Single-j Simulation	Calculation Möller and Nix
^{104}Sn	1216.2 *10*		0.176 *21*				0.0040
^{106}Sn	1210.4 *10*		0.180 *21*				0.016
^{108}Sn	1206.7 *10*		0.184 *22*				0.025
^{110}Sn	1211.9 *2*		0.189 *22*				0.036
^{112}Sn	1257.2 *3*	0.240 *14*	0.194 *23*				0.016
^{114}Sn	1300.0 *1*	0.23 *5*	0.198 *24*				0.0040
^{116}Sn	1293.54 *2*	0.209 *6*	0.203 *24*				0.0090
^{118}Sn	1229.63 *3*	0.209 *8*	0.208 *25*				0.0090
^{120}Sn	1171.24 *3*	0.202 *4*	0.212 *25*				0.0040
^{122}Sn	1140.56 *3*	0.192 *4*	0.217 *26*				0.0040
^{124}Sn	1131.58 *3*	0.166 *4*	0.222 *26*				
^{126}Sn	1141.2 *1*		0.227 *27*				
^{128}Sn	1168.8 *1*		0.231 *28*				
^{130}Sn	1221.24 *5*		0.236 *28*				
^{132}Sn	4040.6 *20*		0.241 *29*				
^{112}Te	689. *2*		0.47 *7*				0.481
^{114}Te	709.0 *4*		0.55 *9*				0.622
^{116}Te	679.0 *3*		0.63 *11*				0.672
^{118}Te	605.2 *4*		0.72 *13*				0.322
^{120}Te	560.4 *3*	0.77 *16*	0.66 *11*				0.359
^{122}Te	564.0 *2*	0.660 *6*	0.60 *10*				0.322
^{124}Te	602.72 *4*	0.568 *6*	0.54 *8*				0.195
^{126}Te	666.2 *1*	0.475 *10*	0.48 *6*				0.081
^{128}Te	743.2 *1*	0.383 *6*	0.413 *50*				0.0090
^{130}Te	839.4 *1*	0.295 *7*	0.351 *36*				
^{132}Te	973.9 *1*		0.291 *26*				
^{134}Te	1279.1 *10*		0.233 *18*				
^{114}Xe	449.7 *2*		0.83 *16*	0.80 *12*	1.12 *16*	0.68 *10*	0.956
^{116}Xe	393.5 *10*		1.00 *21*	1.02 *15*	1.27 *18*	0.83 *13*	1.08
^{118}Xe	337. *1*	1.40 *7*	1.17 *27*	1.27 *18*	1.28 *18*	0.95 *15*	1.15
^{120}Xe	321.8 *10*	0.94 *9*	1.35 *32*	1.55 *22*	1.23 *18*	1.05 *16*	1.15
^{122}Xe	331.3 *2*	1.12 *10*	1.22 *28*	1.30 *19*	1.18 *17*	1.10 *17*	1.08
^{124}Xe	354.1 *2*	1.49 *9*	1.09 *23*	1.07 *16*	1.16 *17*	1.09 *17*	1.02
^{126}Xe	388.5 *1*	0.770 *25*	0.95 *19*	0.86 *12*	1.03 *15*	1.03 *16*	0.672
^{128}Xe	442.91 *7*	0.75 *4*	0.80 *14*	0.67 *10*	0.83 *12*	0.91 *14*	0.526
^{130}Xe	536.09 *5*	0.65 *5*	0.65 *10*	0.50 *7*	0.65 *9*	0.73 *11*	0.224
^{132}Xe	667.67 *6*	0.46 *3*	0.50 *7*	0.36 *5*	0.49 *7*	0.51 *8*	0.025
^{134}Xe	847.03 *3*	0.34 *6*	0.366 *38*				0.0040
^{136}Xe	1313.2 *5*	0.18 *8*	0.238 *19*				
^{138}Xe	589.0 *3*	0.0235 *28*	0.288 *36*				0.0040
^{140}Xe	376.8 *5*	0.323 *14*	0.448 *43*	0.36 *6*	1.08 *25*	0.42 *10*	0.143
^{142}Xe	205. *1*		0.63 *5*	0.54 *9*	1.56 *36*	0.53 *12*	0.526
^{120}Ba	183. *1*		1.73 *45*	1.72 *25*	1.74 *25*	1.26 *19*	1.84
^{122}Ba	197. *1*		2.0 *5*	2.05 *30*	1.69 *24*	1.36 *21*	1.84
^{124}Ba	229.5 *10*		1.80 *47*	1.76 *26*	1.64 *24*	1.42 *22*	1.67
^{126}Ba	255.8 *10*	1.90 *21*	1.60 *40*	1.49 *22*	1.61 *23*	1.42 *22*	1.51
^{128}Ba	284.1 *1*	1.36 *11*	1.39 *32*	1.24 *18*	1.47 *21*	1.35 *21*	1.08

TABLE I. Predicted Values of $B(E2)\uparrow$ in Units of (e^2b^2)
See page 16 for Explanation of Tables

			Global Systematics			Local Systematics	
Nucleus	E(level) (keV)	Measured Value	Bohr and Mottelson	Grodzins	Best Fit	Ross and Bhaduri	Patnaik *et al.*
^{130}Ba	357.3 *1*	1.29 *14*	1.19 *49*	1.01 *33*	1.00 *8*	1.27 *15*	1.32 *16*
^{132}Ba	464.58 *2*	0.86 *6*	0.91 *37*	0.76 *25*	0.76 *8*	0.94 *13*	0.87 *12*
^{134}Ba	604.66 *2*	0.680 *16*	0.70 *28*	0.58 *19*	0.58 *8*	0.58 *9*	0.60 *9*
^{136}Ba	818.50 *5*	0.400 *5*	0.51 *21*	0.42 *14*	0.42 *7*	0.49 *18*	0.47 *17*
^{138}Ba	1435.91 *6*	0.226 *9*	0.29 *12*	0.24 *8*	0.24 *5*	0.18 *9*	0.24 *11*
^{140}Ba	602.2 *3*		0.69 *28*	0.55 *18*	0.56 *8*	0.0332 *21*	0.370 *14*
^{142}Ba	359.52 *2*	0.68 *6*	1.15 *47*	0.92 *30*	0.94 *9*		
^{144}Ba	199.3 *2*	1.04 *6*	2.1 *8*	1.6 *5*	1.67 *13*	1.02 *18*	0.39 *7*
^{146}Ba	180.8 *2*	1.35 *10*	2.3 *9*	1.8 *6*	1.83 *14*	1.38 *24*	2.00 *34*
^{148}Ba	142.5 *10*		2.9 *12*	2.2 *7*	2.30 *20*	1.72 *32*	2.6 *6*
^{126}Ce	170. *2*		2.7 *11*	2.3 *8*	2.31 *20*		
^{128}Ce	207.3 *3*	2.15 *18*	2.2 *9*	1.9 *6*	1.87 *14*	2.76 *40*	2.27 *33*
^{130}Ce	253.9 *4*	1.73 *9*	1.8 *7*	1.5 *5*	1.51 *11*	1.60 *25*	1.72 *27*
^{132}Ce	325.4 *3*	1.77 *14*	1.4 *6*	1.17 *39*	1.17 *9*	1.58 *24*	1.56 *23*
^{134}Ce	409.2 *1*	1.03 *9*	1.10 *45*	0.91 *30*	0.92 *9*	1.18 *18*	1.34 *20*
^{136}Ce	552.2 *2*		0.81 *33*	0.67 *22*	0.67 *8*	0.79 *9*	0.85 *11*
^{138}Ce	788.7 *1*		0.57 *23*	0.46 *15*	0.47 *8*	0.607 *39*	0.470 *12*
^{140}Ce	1596.5 *3*	0.296 *6*	0.28 *11*	0.22 *7*	0.23 *5*	0.195 *13*	0.170 *11*
^{142}Ce	641.2 *1*	0.45 *1*	0.69 *28*	0.55 *18*	0.56 *8*	0.656 *43*	0.576 *38*
^{144}Ce	397.3 *2*		1.11 *45*	0.88 *29*	0.90 *9*	0.647 *31*	0.624 *40*
^{146}Ce	258.3 *2*	0.93 *13*	1.7 *7*	1.33 *44*	1.37 *11*	1.11 *12*	1.05 *11*
^{148}Ce	158.7 *3*	1.89 *15*	2.8 *11*	2.1 *7*	2.21 *18*	2.15 *49*	2.3 *5*
^{150}Ce	97.1 *3*	3.1 *6*	4.5 *18*	3.4 *11*	3.58 *42*	1.76 *50*	1.74 *49*
^{128}Nd	134. *2*		3.7 *15*	3.1 *10*	3.10 *32*		
^{130}Nd	158. *2*		3.1 *13*	2.6 *9*	2.60 *23*		
^{132}Nd	213. *2*		2.3 *9*	1.9 *6*	1.91 *14*		
^{134}Nd	294.2 *3*		1.6 *7*	1.36 *45*	1.37 *10*		
^{136}Nd	373.5 *3*		1.3 *5*	1.06 *35*	1.07 *10*		
^{138}Nd	520.9 *8*		0.92 *38*	0.75 *25*	0.76 *9*		
^{140}Nd	773.4 *2*		0.62 *25*	0.50 *16*	0.50 *8*		
^{142}Nd	1575.7 *4*	0.270 *8*	0.30 *12*	0.24 *8*	0.24 *6*	0.503 *31*	0.396 *25*
^{144}Nd	696.49 *2*	0.55 *3*	0.68 *28*	0.54 *18*	0.55 *8*	0.388 *16*	0.424 *18*
^{146}Nd	453.77 *13*	0.76 *3*	1.04 *42*	0.81 *27*	0.84 *10*	0.814 *42*	0.750 *39*
^{148}Nd	301.7 *1*	1.38 *3*	1.6 *6*	1.20 *40*	1.25 *11*	1.12 *11*	1.28 *13*
^{150}Nd	130.12 *6*	2.75 *4*	3.6 *15*	2.8 *9*	2.86 *27*	2.14 *50*	2.2 *5*
^{152}Nd	72.6 *2*	2.6 *7*	6.4 *26*	4.9 *16*	5.1 *7*	4.6 *7*	3.8 *6*
^{134}Sm	163. *2*		3.2 *13*	2.6 *9*	2.64 *22*		
^{136}Sm	256. *2*		2.0 *8*	1.6 *5*	1.66 *12*		
^{138}Sm	346.7 *10*	1.64 *35*	1.5 *6*	1.20 *40*	1.21 *11*		
^{140}Sm	531.0 *3*		0.96 *39*	0.77 *26*	0.78 *10*		
^{142}Sm	768.2 *4*		0.66 *27*	0.52 *17*	0.54 *9*		
^{144}Sm	1660.2 *2*	0.266 *8*	0.30 *12*	0.24 *8*	0.25 *6*		
^{146}Sm	747.24 *6*		0.67 *28*	0.52 *17*	0.54 *9*	0.550 *30*	0.536 *27*
^{148}Sm	550.2 *1*	0.72 *3*	0.91 *37*	0.70 *23*	0.73 *10*	0.669 *34*	0.730 *37*
^{150}Sm	333.95 *1*	1.35 *3*	1.5 *6*	1.14 *38*	1.19 *11*	1.51 *10*	1.59 *10*
^{152}Sm	121.78 *1*	3.44 *4*	4.1 *17*	3.1 *10*	3.24 *32*	4.1 *6*	3.6 *5*
^{154}Sm	81.99 *2*	4.36 *5*	6.0 *25*	4.5 *15*	4.8 *6*	3.2 *6*	3.8 *7*

TABLE I. Predicted Values of $B(E2)\uparrow$ in Units of (e^2b^2)

See page 16 for Explanation of Tables

			Regional Systematics				Global
Nucleus	E(level) (keV)	Measured Value	$\beta_2/\beta_{2(\mathrm{sp})}$ Fit	IBA SU(3)	Stretched sp. "SU(3)"	Single-j Simulation	Calculation Möller and Nix
^{130}Ba	357.3 *1*	1.29 *14*	1.16 *25*	1.01 *15*	1.22 *18*	1.21 *18*	0.837
^{132}Ba	464.58 *2*	0.86 *6*	0.92 *18*	0.81 *12*	1.00 *14*	1.00 *15*	0.526
^{134}Ba	604.66 *2*	0.680 *16*	0.68 *11*	0.62 *9*	0.80 *11*	0.74 *11*	0.143
^{136}Ba	818.50 *5*	0.400 *5*	0.45 *5*				0.016
^{138}Ba	1435.91 *6*	0.226 *9*	0.242 *19*				0.0040
^{140}Ba	602.2 *3*		0.368 *40*				0.016
^{142}Ba	359.52 *2*	0.68 *6*	0.63 *5*	0.61 *10*	1.62 *37*	0.80 *18*	0.439
^{144}Ba	199.3 *2*	1.04 *6*	0.94 *6*	0.83 *14*	2.2 *5*	0.94 *21*	0.725
^{146}Ba	180.8 *2*	1.35 *10*	1.27 *7*	1.09 *18*	2.6 *6*	1.09 *24*	1.29
^{148}Ba	142.5 *10*		1.62 *9*	1.40 *23*	3.0 *7*	1.25 *28*	2.01
^{126}Ce	170. *2*		2.4 *7*	2.30 *33*	1.88 *27*	1.77 *27*	2.29
^{128}Ce	207.3 *3*	2.15 *18*	2.1 *6*	1.99 *29*	1.85 *27*	1.76 *27*	2.11
^{130}Ce	253.9 *4*	1.73 *9*	1.84 *48*	1.70 *25*	1.69 *24*	1.69 *26*	1.59
^{132}Ce	325.4 *3*	1.77 *14*	1.54 *37*	1.43 *21*	1.43 *20*	1.53 *24*	1.15
^{134}Ce	409.2 *1*	1.03 *9*	1.21 *26*	1.18 *17*	1.19 *17*	1.29 *20*	0.672
^{136}Ce	552.2 *2*		0.87 *16*	0.96 *14*	0.97 *14*	1.00 *15*	0.359
^{138}Ce	788.7 *1*		0.54 *7*				0.025
^{140}Ce	1596.5 *3*	0.296 *6*	0.247 *19*				0.0040
^{142}Ce	641.2 *1*	0.45 *1*	0.456 *44*				0.016
^{144}Ce	397.3 *2*		0.84 *6*	0.92 *15*	1.90 *43*	1.25 *28*	0.622
^{146}Ce	258.3 *2*	0.93 *13*	1.27 *7*	1.19 *20*	2.5 *6*	1.43 *32*	1.08
^{148}Ce	158.7 *3*	1.89 *15*	1.72 *9*	1.51 *25*	2.9 *7*	1.62 *36*	1.75
^{150}Ce	97.1 *3*	3.1 *6*	2.18 *11*	1.86 *31*	3.4 *8*	1.81 *41*	2.49
^{128}Nd	134. *2*		2.8 *9*	2.92 *42*	2.10 *30*	2.11 *32*	3.35
^{130}Nd	158. *2*		2.6 *8*	2.57 *37*	2.08 *30*	2.11 *32*	3.01
^{132}Nd	213. *2*		2.3 *6*	2.24 *32*	1.91 *27*	2.02 *31*	2.69
^{134}Nd	294.2 *3*		1.92 *49*	1.93 *28*	1.63 *23*	1.85 *28*	1.44
^{136}Nd	373.5 *3*		1.51 *35*	1.64 *24*	1.37 *20*	1.59 *24*	0.956
^{138}Nd	520.9 *8*		1.07 *21*	1.37 *20*	1.13 *16*	1.26 *19*	0.481
^{140}Nd	773.4 *2*		0.63 *9*				0.049
^{142}Nd	1575.7 *4*	0.270 *8*	0.252 *20*				0.0040
^{144}Nd	696.49 *2*	0.55 *3*	0.553 *48*				0.016
^{146}Nd	453.77 *13*	0.76 *3*	1.06 *7*	1.29 *21*	2.16 *50*	1.74 *39*	0.837
^{148}Nd	301.7 *1*	1.38 *3*	1.62 *9*	1.62 *27*	2.8 *6*	1.96 *44*	1.67
^{150}Nd	130.12 *6*	2.75 *4*	2.18 *11*	1.99 *33*	3.3 *8*	2.18 *49*	2.59
^{152}Nd	72.6 *2*	2.6 *7*	2.74 *14*	2.40 *40*	3.8 *8*	2.4 *5*	3.35
^{134}Sm	163. *2*		2.7 *8*	2.86 *41*	2.17 *31*	2.34 *36*	3.23
^{136}Sm	256. *2*		2.3 *6*	2.50 *36*	1.87 *27*	2.15 *33*	1.75
^{138}Sm	346.7 *10*	1.64 *35*	1.81 *45*	2.17 *31*	1.59 *23*	1.87 *29*	1.36
^{140}Sm	531.0 *3*		1.28 *27*	1.86 *27*	1.33 *19*	1.51 *23*	0.725
^{142}Sm	768.2 *4*		0.73 *12*				0.036
^{144}Sm	1660.2 *2*	0.266 *8*	0.257 *20*				0.0040
^{146}Sm	747.24 *6*		0.66 *5*				0.0090
^{148}Sm	550.2 *1*	0.72 *3*	1.29 *8*	1.74 *29*	2.5 *6*	2.2 *5*	1.02
^{150}Sm	333.95 *1*	1.35 *3*	1.97 *10*	2.12 *35*	3.2 *7*	2.5 *6*	1.93
^{152}Sm	121.78 *1*	3.44 *4*	2.64 *13*	2.54 *42*	3.7 *8*	2.7 *6*	2.69
^{154}Sm	81.99 *2*	4.36 *5*	3.26 *17*	3.00 *50*	4.2 *10*	3.0 *7*	3.46

TABLE I. Predicted Values of $B(E2)\uparrow$ in Units of (e^2b^2)
See page 16 for Explanation of Tables

			Global Systematics			Local Systematics	
Nucleus	E(level) (keV)	Measured Value	Bohr and Mottelson	Grodzins	Best Fit	Ross and Bhaduri	Patnaik *et al.*
^{156}Sm	76.0 *5*		6.5 *26*	4.8 *16*	5.1 *7*	4.57 *8*	4.74 *9*
^{158}Sm	72.8 *5*		6.7 *28*	5.0 *16*	5.3 *7*		
^{138}Gd	221. *2*		2.5 *10*	2.0 *7*	2.03 *15*		
^{140}Gd	329. *2*		1.6 *7*	1.32 *44*	1.35 *12*		
^{142}Gd	526.0 *2*		1.03 *42*	0.82 *27*	0.84 *10*		
^{144}Gd	742.6 *5*		0.72 *30*	0.57 *19*	0.59 *9*		
^{146}Gd	1972. *2*		0.27 *11*	0.21 *7*	0.22 *6*		
^{148}Gd	784.5 *1*		0.68 *28*	0.53 *17*	0.54 *9*		
^{150}Gd	638.1 *1*		0.83 *34*	0.64 *21*	0.66 *10*	0.80 *7*	1.13 *16*
^{152}Gd	344.27 *1*	1.76 *15*	1.5 *6*	1.17 *39*	1.22 *12*	1.74 *7*	2.14 *9*
^{154}Gd	123.07 *3*	3.85 *5*	4.3 *18*	3.2 *11*	3.38 *32*	3.87 *26*	3.58 *24*
^{156}Gd	88.97 *1*	4.64 *5*	5.9 *24*	4.4 *15*	4.6 *6*	4.66 *11*	4.73 *12*
^{158}Gd	79.51 *1*	5.02 *5*	6.6 *27*	4.9 *16*	5.1 *7*	5.04 *18*	5.04 *18*
^{160}Gd	75.26 *1*	5.25 *6*	6.9 *28*	5.1 *17*	5.4 *7*	5.16 *21*	5.24 *21*
^{146}Dy	682.9 *3*		0.83 *34*	0.65 *22*	0.67 *10*		
^{148}Dy	1677.7 *10*		0.34 *14*	0.26 *9*	0.27 *7*		
^{150}Dy	804.4 *5*		0.70 *29*	0.54 *18*	0.56 *10*		
^{152}Dy	613.9 *5*		0.91 *37*	0.70 *23*	0.73 *11*		
^{154}Dy	334.5 *2*	2.39 *12*	1.7 *7*	1.26 *42*	1.32 *13*	1.71 *15*	1.98 *17*
^{156}Dy	137.85 *8*	3.71 *4*	4.0 *16*	3.0 *10*	3.18 *28*	4.24 *36*	3.86 *32*
^{158}Dy	98.94 *1*	4.66 *5*	5.6 *23*	4.2 *14*	4.39 *48*	4.66 *25*	4.66 *25*
^{160}Dy	86.79 *1*	5.06 *14*	6.4 *26*	4.7 *16*	5.0 *6*	5.03 *17*	5.06 *17*
^{162}Dy	80.66 *1*	5.28 *15*	6.8 *28*	5.0 *16*	5.3 *7*	5.36 *15*	5.34 *15*
^{164}Dy	73.39 *1*	5.60 *5*	7.4 *30*	5.4 *18*	5.8 *8*	5.52 *17*	5.66 *18*
^{166}Dy	76.58 *1*		7.1 *29*	5.1 *17*	5.5 *7*	5.29 *10*	5.56 *12*
^{148}Er	646.6 *10*		0.93 *38*	0.72 *24*	0.75 *11*		
^{150}Er	1578.8 *2*		0.38 *16*	0.29 *10*	0.30 *8*		
^{152}Er	808.2 *10*		0.74 *30*	0.56 *19*	0.59 *10*		
^{154}Er	560.8 *5*		1.06 *43*	0.80 *26*	0.84 *12*		
^{156}Er	344.4 *3*	1.64 *7*	1.7 *7*	1.28 *43*	1.35 *14*	2.24 *32*	2.04 *30*
^{158}Er	192.3 *3*	3.02 *23*	3.1 *12*	2.3 *8*	2.40 *19*	2.68 *32*	3.00 *35*
^{160}Er	125.6 *2*	4.36 *18*	4.7 *19*	3.4 *11*	3.64 *34*	4.32 *45*	4.20 *44*
^{162}Er	102.08 *10*	5.01 *6*	5.7 *23*	4.2 *14*	4.44 *47*	5.01 *40*	4.96 *39*
^{164}Er	91.39 *1*	5.45 *6*	6.4 *26*	4.6 *15*	4.9 *6*	5.41 *30*	5.45 *30*
^{166}Er	80.57 *1*	5.83 *5*	7.2 *29*	5.2 *17*	5.5 *7*	5.94 *26*	5.87 *26*
^{168}Er	79.80 *1*	5.79 *10*	7.2 *30*	5.1 *17*	5.5 *7*	5.72 *20*	5.65 *19*
^{170}Er	78.59 *2*	5.82 *10*	7.3 *30*	5.2 *17*	5.6 *7*	5.82 *20*	6.12 *21*
^{152}Yb	1531.2 *10*		0.41 *17*	0.31 *10*	0.33 *8*		
^{156}Yb	536.4 *2*		1.17 *48*	0.87 *29*	0.92 *13*		
^{158}Yb	357.9 *8*	1.85 *26*	1.7 *7*	1.29 *43*	1.37 *15*	1.64 *20*	1.10 *14*
^{160}Yb	243.1 *10*	2.48 *22*	2.6 *10*	1.9 *6*	1.99 *17*	2.68 *40*	2.70 *40*
^{162}Yb	166.3 *2*	3.50 *35*	3.7 *15*	2.7 *9*	2.89 *24*	3.43 *35*	3.76 *38*
^{164}Yb	123.3 *1*	4.34 *24*	5.0 *20*	3.6 *12*	3.87 *36*	4.40 *39*	4.39 *39*
^{166}Yb	102.38 *3*	5.14 *28*	6.0 *24*	4.3 *14*	4.62 *48*	5.1 *6*	5.1 *6*
^{168}Yb	87.73 *1*	5.73 *10*	7.0 *28*	5.0 *16*	5.3 *6*	5.9 *10*	5.9 *10*
^{170}Yb	84.26 *1*	5.71 *16*	7.2 *30*	5.1 *17*	5.5 *6*	5.4 *7*	5.6 *7*

TABLE I. Predicted Values of $B(E2)\uparrow$ in Units of (e^2b^2)
See page 16 for Explanation of Tables

Nucleus	E(level) (keV)	Measured Value	Regional Systematics				Global
			$\beta_2/\beta_{2(\mathrm{sp})}$ Fit	IBA SU(3)	Stretched sp. "SU(3)"	Single-j Simulation	Calculation Möller and Nix
^{156}Sm	76.0 *5*		3.84 *20*	3.5 *6*	4.8 *11*	3.2 *7*	3.58
^{158}Sm	72.8 *5*		4.35 *23*	4.0 *7*	5.0 *11*	3.5 *8*	3.82
^{138}Gd	221. *2*		2.6 *8*	3.16 *46*	1.88 *27*	2.41 *37*	2.20
^{140}Gd	329. *2*		2.1 *6*	2.79 *40*	1.59 *23*	2.11 *32*	1.59
^{142}Gd	526.0 *2*		1.50 *34*	2.43 *35*	1.33 *19*	1.73 *26*	0.725
^{144}Gd	742.6 *5*		0.84 *14*				0.622
^{146}Gd	1972. *2*		0.261 *20*				
^{148}Gd	784.5 *1*		0.77 *6*				0.0090
^{150}Gd	638.1 *1*		1.53 *8*	2.26 *37*	2.5 *6*	2.7 *6*	1.08
^{152}Gd	344.27 *1*	1.76 *15*	2.33 *12*	2.69 *44*	3.2 *7*	2.9 *7*	2.01
^{154}Gd	123.07 *3*	3.85 *5*	3.08 *16*	3.2 *5*	3.7 *8*	3.2 *7*	2.59
^{156}Gd	88.97 *1*	4.64 *5*	3.76 *20*	3.7 *6*	4.2 *10*	3.5 *8*	3.58
^{158}Gd	79.51 *1*	5.02 *5*	4.35 *23*	4.2 *7*	4.8 *11*	3.8 *8*	3.82
^{160}Gd	75.26 *1*	5.25 *6*	4.86 *27*	4.8 *8*	5.0 *11*	4.0 *9*	3.95
^{146}Dy	682.9 *3*		0.95 *17*				0.725
^{148}Dy	1677.7 *10*		0.266 *21*				0.0040
^{150}Dy	804.4 *5*		0.88 *6*				0.036
^{152}Dy	613.9 *5*		1.78 *10*	2.84 *47*	2.4 *5*	3.0 *7*	1.15
^{154}Dy	334.5 *2*	2.39 *12*	2.69 *14*	3.3 *6*	3.1 *7*	3.3 *7*	2.11
^{156}Dy	137.85 *8*	3.71 *4*	3.50 *18*	3.9 *6*	3.6 *8*	3.6 *8*	2.49
^{158}Dy	98.94 *1*	4.66 *5*	4.21 *22*	4.4 *7*	4.0 *9*	3.9 *9*	3.46
^{160}Dy	86.79 *1*	5.06 *14*	4.80 *26*	5.1 *8*	4.6 *10*	4.2 *9*	3.70
^{162}Dy	80.66 *1*	5.28 *15*	5.30 *30*	5.7 *9*	4.9 *11*	4.4 *10*	3.82
^{164}Dy	73.39 *1*	5.60 *5*	5.71 *33*	6.4 *11*	5.0 *12*	4.7 *10*	4.07
^{166}Dy	76.58 *1*		6.05 *36*	7.2 *12*	5.2 *12*	4.9 *11*	4.20
^{148}Er	646.6 *10*		0.87 *15*				0.837
^{150}Er	1578.8 *2*		0.271 *21*				0.0040
^{152}Er	808.2 *10*		0.79 *6*				0.099
^{154}Er	560.8 *5*		1.59 *9*	2.30 *38*	2.3 *5*	3.2 *7*	1.15
^{156}Er	344.4 *3*	1.64 *7*	2.41 *12*	2.74 *45*	3.0 *7*	3.5 *8*	1.93
^{158}Er	192.3 *3*	3.02 *23*	3.19 *16*	3.2 *5*	3.4 *8*	3.8 *8*	2.49
^{160}Er	125.6 *2*	4.36 *18*	3.88 *20*	3.8 *6*	3.9 *9*	4.1 *9*	3.35
^{162}Er	102.08 *10*	5.01 *6*	4.49 *24*	4.3 *7*	4.5 *10*	4.4 *10*	3.82
^{164}Er	91.39 *1*	5.45 *6*	5.02 *28*	4.9 *8*	4.7 *11*	4.6 *10*	3.95
^{166}Er	80.57 *1*	5.83 *5*	5.47 *31*	5.6 *9*	4.9 *11*	4.9 *11*	4.20
^{168}Er	79.80 *1*	5.79 *10*	5.86 *34*	6.3 *10*	5.0 *12*	5.2 *12*	4.47
^{170}Er	78.59 *2*	5.82 *10*	6.19 *36*	7.1 *12*	5.3 *12*	5.4 *12*	4.47
^{152}Yb	1531.2 *10*		0.276 *22*				0.0040
^{156}Yb	536.4 *2*		1.38 *8*	1.80 *30*	2.2 *5*	3.1 *7*	0.956
^{158}Yb	357.9 *8*	1.85 *26*	2.11 *11*	2.19 *36*	2.9 *7*	3.4 *8*	1.59
^{160}Yb	243.1 *10*	2.48 *22*	2.83 *14*	2.63 *43*	3.4 *8*	3.7 *8*	2.39
^{162}Yb	166.3 *2*	3.50 *35*	3.49 *18*	3.1 *5*	3.8 *9*	4.0 *9*	2.79
^{164}Yb	123.3 *1*	4.34 *24*	4.10 *22*	3.6 *6*	4.4 *10*	4.3 *10*	3.70
^{166}Yb	102.38 *3*	5.14 *28*	4.64 *25*	4.2 *7*	4.6 *10*	4.6 *10*	4.20
^{168}Yb	87.73 *1*	5.73 *10*	5.12 *28*	4.8 *8*	4.8 *11*	4.9 *11*	4.47
^{170}Yb	84.26 *1*	5.71 *16*	5.55 *31*	5.5 *9*	5.0 *11*	5.1 *11*	4.47

TABLE I. Predicted Values of $B(E2)\uparrow$ in Units of (e^2b^2)
See page 16 for Explanation of Tables

			Global Systematics			Local Systematics	
Nucleus	E(level) (keV)	Measured Value	Bohr and Mottelson	Grodzins	Best Fit	Ross and Bhaduri	Patnaik *et al.*
^{172}Yb	78.75 *1*	6.04 *7*	7.7 *31*	5.4 *18*	5.9 *7*	5.94 *42*	5.78 *41*
^{174}Yb	76.48 *1*	5.94 *6*	7.9 *32*	5.5 *18*	6.0 *7*	6.33 *32*	6.18 *31*
^{176}Yb	82.13 *2*	5.41 *10*	7.3 *30*	5.0 *17*	5.5 *6*	5.34 *13*	5.49 *14*
^{178}Yb	82. *5*		7.3 *30*	5.0 *17*	5.5 *6*	5.24 *14*	5.24 *14*
^{162}Hf	285.0 *3*		2.3 *9*	1.7 *6*	1.78 *17*		
^{164}Hf	211. *1*		3.1 *13*	2.2 *7*	2.39 *20*	2.84 *38*	2.62 *46*
^{166}Hf	158.7 *5*	3.46 *18*	4.1 *17*	2.9 *10*	3.15 *26*	3.60 *30*	3.71 *31*
^{168}Hf	123.7 *3*	4.28 *22*	5.2 *21*	3.7 *12*	4.01 *37*	3.9 *7*	3.8 *7*
^{170}Hf	100.3 *1*	5.0 *11*	6.4 *26*	4.5 *15*	4.9 *5*	5.19 *44*	5.28 *45*
^{172}Hf	95.26 *5*	4.38 *31*	6.7 *28*	4.7 *16*	5.1 *6*	4.8 *8*	4.7 *8*
^{174}Hf	91.00 *2*	4.80 *29*	7.0 *29*	4.9 *16*	5.3 *6*	4.92 *28*	5.04 *29*
^{176}Hf	88.35 *4*	5.27 *10*	7.2 *29*	5.0 *16*	5.4 *6*	4.96 *23*	5.02 *24*
^{178}Hf	93.17 *1*	4.82 *6*	6.8 *28*	4.7 *16*	5.1 *6*	4.88 *24*	4.72 *23*
^{180}Hf	93.32 *1*	4.65 *8*	6.8 *28*	4.6 *15*	5.1 *5*	4.60 *29*	4.78 *30*
^{182}Hf	97.8 *2*		6.4 *26*	4.3 *14*	4.8 *5*	4.43 *17*	4.23 *15*
^{184}Hf	107.4 *10*		5.8 *24*	3.9 *13*	4.34 *43*		
^{168}W	199.3 *3*	3.22 *16*	3.4 *14*	2.4 *8*	2.63 *22*	2.90 *22*	2.74 *21*
^{170}W	156.0 *2*	3.56 *8*	4.4 *18*	3.1 *10*	3.33 *28*	4.4 *8*	4.6 *8*
^{172}W	122.9 *4*	5.85 *48*	5.5 *22*	3.9 *13*	4.19 *39*	4.3 *10*	4.3 *10*
^{174}W	113.0 *1*		6.0 *24*	4.2 *14*	4.52 *44*	4.9 *13*	5.2 *12*
^{176}W	108.9 *3*		6.2 *25*	4.3 *14*	4.66 *46*		
^{178}W	105.9 *3*		6.3 *26*	4.3 *14*	4.75 *48*	4.24 *26*	4.64 *26*
^{180}W	103.6 *2*	4.19 *23*	6.4 *26*	4.4 *14*	4.82 *49*	4.60 *35*	4.54 *34*
^{182}W	100.11 *1*	4.15 *11*	6.6 *27*	4.5 *15*	5.0 *5*	3.87 *32*	3.87 *32*
^{184}W	111.21 *1*	3.73 *7*	6.0 *24*	4.0 *13*	4.42 *43*	3.88 *21*	3.84 *21*
^{186}W	122.63 *2*	3.44 *6*	5.4 *22*	3.6 *12*	3.98 *37*	3.34 *15*	3.36 *15*
^{188}W	143. *2*		4.6 *19*	3.0 *10*	3.39 *30*	3.24 *17*	3.20 *12*
^{172}Os	227.7 *3*		3.1 *13*	2.2 *7*	2.39 *22*		
^{174}Os	158.5 *2*		4.5 *18*	3.1 *10*	3.40 *29*		
^{176}Os	135.2 *2*		5.2 *21*	3.6 *12*	3.96 *35*		
^{178}Os	131.6 *3*		5.4 *22*	3.7 *12*	4.03 *36*		
^{180}Os	131.8 *3*		5.3 *22*	3.6 *12*	4.00 *36*		
^{182}Os	126.9 *2*	3.81 *33*	5.5 *23*	3.7 *12*	4.12 *38*	3.21 *23*	3.70 *27*
^{184}Os	119.79 *10*	3.20 *15*	5.8 *24*	3.9 *13*	4.33 *41*	3.42 *42*	3.31 *40*
^{186}Os	137.16 *1*	2.91 *10*	5.1 *21*	3.4 *11*	3.76 *34*	3.05 *46*	2.96 *44*
^{188}Os	155.03 *1*	2.54 *6*	4.5 *18*	3.0 *10*	3.30 *30*	2.40 *37*	2.27 *35*
^{190}Os	186.68 *4*	2.30 *9*	3.7 *15*	2.4 *8*	2.72 *26*	2.41 *24*	2.50 *26*
^{192}Os	205.79 *1*	2.05 *7*	3.3 *14*	2.2 *7*	2.45 *24*	1.94 *12*	2.05 *13*
^{194}Os	218.51 *2*		3.1 *13*	2.0 *7*	2.29 *24*	1.80 *8*	1.79 *10*
^{196}Os	300. *20*		2.3 *9*	1.46 *49*	1.66 *21*		
^{176}Pt	263.9 *10*		2.8 *12*	2.0 *7*	2.14 *20*		
^{178}Pt	170.1 *10*		4.4 *18*	3.0 *10*	3.29 *28*		
^{180}Pt	152.2 *3*		4.9 *20*	3.3 *11*	3.65 *32*		
^{182}Pt	154.9 *2*		4.8 *20*	3.2 *11*	3.56 *31*	5.6 *22*	4.5 *5*
^{184}Pt	162.96 *9*	3.95 *14*	4.5 *18*	3.0 *10*	3.35 *30*	5.1 *5*	3.59 *38*
^{186}Pt	191.53 *4*	2.98 *11*	3.8 *16*	2.5 *8*	2.83 *26*	2.86 *44*	3.12 *48*

TABLE I. Predicted Values of $B(E2)\uparrow$ in Units of (e^2b^2)
See page 16 for Explanation of Tables

Nucleus	E(level) (keV)	Measured Value	Regional Systematics $\beta_2/\beta_{2(\mathrm{sp})}$ Fit	IBA SU(3)	Stretched sp. "SU(3)"	Single-j Simulation	Global Calculation Möller and Nix
^{172}Yb	78.75 *1*	6.04 *7*	5.92 *34*	6.2 *10*	5.2 *12*	5.3 *12*	4.74
^{174}Yb	76.48 *1*	5.94 *6*	6.25 *36*	6.9 *11*	5.1 *12*	5.5 *12*	4.33
^{176}Yb	82.13 *2*	5.41 *10*	6.10 *35*	6.3 *10*	4.9 *11*	5.6 *12*	4.07
^{178}Yb	82. *5*		5.90 *33*	5.6 *9*	4.6 *11*	5.6 *13*	4.07
^{162}Hf	285.0 *3*		2.42 *12*	2.09 *34*	3.0 *7*	3.5 *8*	1.84
^{164}Hf	211. *1*		3.03 *15*	2.52 *42*	3.5 *8*	3.8 *8*	2.59
^{166}Hf	158.7 *5*	3.46 *18*	3.61 *18*	2.99 *49*	4.0 *9*	4.0 *9*	2.79
^{168}Hf	123.7 *3*	4.28 *22*	4.14 *22*	3.5 *6*	4.2 *10*	4.3 *10*	3.46
^{170}Hf	100.3 *1*	5.0 *11*	4.64 *25*	4.1 *7*	4.4 *10*	4.6 *10*	4.47
^{172}Hf	95.26 *5*	4.38 *31*	5.09 *28*	4.7 *8*	4.5 *10*	4.8 *11*	4.74
^{174}Hf	91.00 *2*	4.80 *29*	5.49 *30*	5.3 *9*	4.7 *11*	5.0 *11*	4.74
^{176}Hf	88.35 *4*	5.27 *10*	5.86 *33*	6.0 *10*	4.6 *11*	5.2 *12*	4.47
^{178}Hf	93.17 *1*	4.82 *6*	5.66 *31*	5.4 *9*	4.4 *10*	5.3 *12*	4.20
^{180}Hf	93.32 *1*	4.65 *8*	5.40 *29*	4.8 *8*	4.2 *10*	5.3 *12*	4.20
^{182}Hf	97.8 *2*		5.08 *27*	4.2 *7*	4.0 *9*	5.3 *12*	3.95
^{184}Hf	107.4 *10*		4.68 *24*	3.7 *6*	3.8 *9*	5.2 *12*	3.70
^{168}W	199.3 *3*	3.22 *16*	3.02 *15*	2.41 *40*	3.3 *8*	3.5 *8*	2.39
^{170}W	156.0 *2*	3.56 *8*	3.51 *18*	2.87 *47*	3.5 *8*	3.8 *8*	2.79
^{172}W	122.9 *4*	5.85 *48*	3.99 *21*	3.4 *6*	3.7 *8*	4.0 *9*	3.46
^{174}W	113.0 *1*		4.44 *23*	3.9 *6*	3.8 *9*	4.2 *9*	3.70
^{176}W	108.9 *3*		4.86 *26*	4.5 *7*	4.0 *9*	4.4 *10*	3.95
^{178}W	105.9 *3*		5.25 *28*	5.2 *8*	3.9 *9*	4.5 *10*	3.70
^{180}W	103.6 *2*	4.19 *23*	5.00 *27*	4.6 *8*	3.7 *8*	4.6 *10*	3.70
^{182}W	100.11 *1*	4.15 *11*	4.71 *25*	4.0 *7*	3.5 *8*	4.7 *10*	3.70
^{184}W	111.21 *1*	3.73 *7*	4.36 *22*	3.5 *6*	3.3 *8*	4.6 *10*	3.23
^{186}W	122.63 *2*	3.44 *6*	3.96 *20*	3.0 *5*	3.1 *7*	4.6 *10*	3.12
^{188}W	143. *2*		3.50 *18*	2.60 *43*	2.8 *6*	4.4 *10*	2.69
^{172}Os	227.7 *3*		2.75 *14*	2.30 *38*	2.9 *7*	2.9 *7*	2.11
^{174}Os	158.5 *2*		3.16 *16*	2.76 *46*	3.0 *7*	3.2 *7*	2.79
^{176}Os	135.2 *2*		3.57 *18*	3.2 *5*	3.2 *7*	3.3 *7*	3.01
^{178}Os	131.6 *3*		3.96 *20*	3.8 *6*	3.3 *8*	3.5 *8*	3.01
^{180}Os	131.8 *3*		4.34 *22*	4.4 *7*	3.2 *7*	3.6 *8*	3.01
^{182}Os	126.9 *2*	3.81 *33*	4.08 *21*	3.9 *6*	3.0 *7*	3.7 *8*	3.23
^{184}Os	119.79 *10*	3.20 *15*	3.78 *19*	3.4 *6*	2.9 *6*	3.7 *8*	3.01
^{186}Os	137.16 *1*	2.91 *10*	3.46 *18*	2.88 *48*	2.7 *6*	3.7 *8*	2.90
^{188}Os	155.03 *1*	2.54 *6*	3.09 *16*	2.44 *40*	2.5 *6*	3.7 *8*	2.29
^{190}Os	186.68 *4*	2.30 *9*	2.70 *14*	2.03 *34*	2.2 *5*	3.5 *8*	1.75
^{192}Os	205.79 *1*	2.05 *7*	2.29 *12*	1.66 *27*	1.81 *41*	3.3 *7*	1.59
^{194}Os	218.51 *2*		1.85 *11*	1.32 *22*	1.43 *33*	3.1 *7*	1.51
^{196}Os	300. *20*		1.41 *9*	1.02 *17*	1.08 *25*	2.8 *6*	1.44
^{176}Pt	263.9 *10*		2.17 *12*	2.19 *36*	2.4 *6*	2.16 *48*	1.84
^{178}Pt	170.1 *10*		2.48 *13*	2.64 *44*	2.6 *6*	2.3 *5*	2.39
^{180}Pt	152.2 *3*		2.78 *14*	3.1 *5*	2.7 *6*	2.4 *5*	4.47
^{182}Pt	154.9 *2*		3.10 *16*	3.7 *6*	2.6 *6*	2.5 *6*	3.82
^{184}Pt	162.96 *9*	3.95 *14*	2.87 *15*	3.2 *5*	2.5 *6*	2.6 *6*	3.58
^{186}Pt	191.53 *4*	2.98 *11*	2.63 *14*	2.72 *45*	2.3 *5*	2.6 *6*	3.01

TABLE I. Predicted Values of $B(E2)\uparrow$ in Units of (e^2b^2)
See page 16 for Explanation of Tables

Nucleus	E(level) (keV)	Measured Value	Global Systematics			Local Systematics	
			Bohr and Mottelson	Grodzins	Best Fit	Ross and Bhaduri	Patnaik *et al.*
^{188}Pt	265.63 *6*	2.60 *47*	2.8 *11*	1.8 *6*	2.03 *22*	2.12 *22*	2.40 *25*
^{190}Pt	295.82 *4*	1.75 *22*	2.5 *10*	1.6 *5*	1.81 *22*	2.02 *28*	2.19 *30*
^{192}Pt	316.50 *1*	1.91 *6*	2.3 *9*	1.49 *50*	1.68 *21*	1.80 *19*	1.71 *18*
^{194}Pt	328.45 *2*	1.66 *6*	2.2 *9*	1.42 *47*	1.60 *21*	1.85 *10*	1.61 *9*
^{196}Pt	355.7 *1*	1.40 *4*	2.0 *8*	1.30 *43*	1.47 *20*	1.47 *8*	1.35 *7*
^{198}Pt	407.2 *1*	1.06 *5*	1.8 *7*	1.12 *37*	1.28 *20*	0.896 *30*	1.263 *42*
^{200}Pt	466. *6*		1.5 *6*	0.97 *32*	1.11 *18*	0.753 *35*	0.82 *5*
^{182}Hg	351.8 *5*		2.2 *9*	1.49 *49*	1.65 *21*		
^{184}Hg	366.7 *10*	1.94 *45*	2.1 *9*	1.41 *47*	1.57 *21*		
^{186}Hg	405.3 *10*	1.37 *23*	1.9 *8*	1.26 *42*	1.41 *20*		
^{188}Hg	412.9 *1*		1.9 *8*	1.23 *41*	1.37 *20*	1.21 *19*	0.40 *29*
^{190}Hg	416.5 *3*		1.8 *8*	1.20 *40*	1.35 *20*		
^{192}Hg	422.8 *3*		1.8 *7*	1.17 *39*	1.32 *20*		
^{194}Hg	428.1 *3*		1.8 *7*	1.15 *38*	1.30 *20*	1.26 *8*	1.40 *10*
^{196}Hg	426.1 *1*	1.15 *5*	1.8 *7*	1.14 *38*	1.29 *20*	1.030 *49*	1.25 *6*
^{198}Hg	411.80 *2*	0.990 *12*	1.8 *7*	1.17 *39*	1.33 *20*	0.95 *6*	1.04 *6*
^{200}Hg	367.97 *2*	0.853 *11*	2.0 *8*	1.30 *43*	1.48 *22*	0.98 *6*	0.650 *37*
^{202}Hg	439.4 *2*	0.612 *10*	1.7 *7*	1.07 *36*	1.23 *20*		0.489 *17*
^{204}Hg	436.6 *2*	0.427 *7*	1.7 *7*	1.07 *36*	1.23 *20*	0.246 *9*	0.550 *20*
^{206}Hg	1068. *1*		0.70 *28*	0.43 *14*	0.50 *13*	0.150 *7*	0.617 *31*
^{190}Pb	773. *2*		1.04 *42*	0.68 *23*	0.76 *16*		
^{192}Pb	851.5 *10*		0.94 *38*	0.61 *20*	0.69 *15*		
^{194}Pb	964.2 *10*		0.83 *34*	0.54 *18*	0.60 *14*		
^{196}Pb	1048.6 *10*		0.76 *31*	0.49 *16*	0.55 *14*		
^{198}Pb	1063.5 *3*		0.74 *30*	0.48 *16*	0.54 *14*		
^{200}Pb	1026.5 *2*		0.77 *32*	0.49 *16*	0.56 *14*		
^{202}Pb	960.8 *2*		0.82 *34*	0.52 *17*	0.59 *14*	0.1644 *48*	0.403 *15*
^{204}Pb	899.15 *15*	0.162 *4*	0.87 *36*	0.55 *18*	0.63 *15*	0.1029 *32*	0.285 *9*
^{206}Pb	803,05 *5*	0.100 *2*	0.97 *40*	0.61 *20*	0.70 *16*	0.1463 *50*	
^{208}Pb	4084.7 *5*	0.29 *3*	0.19 *8*	0.118 *39*	0.14 *6*		
^{210}Pb	800. *1*	0.051 *15*	0.97 *40*	0.60 *20*	0.69 *16*		
^{212}Pb	805. *1*		0.96 *39*	0.59 *20*	0.68 *16*		
^{214}Pb	837. *2*		0.92 *38*	0.56 *19*	0.65 *16*		
^{200}Po	666. *1*		1.2 *5*	0.79 *26*	0.90 *18*		
^{202}Po	677.4 *5*		1.22 *50*	0.77 *26*	0.88 *18*		
^{204}Po	683.5 *5*		1.21 *49*	0.75 *25*	0.86 *18*		
^{206}Po	700.31 *2*		1.17 *48*	0.73 *24*	0.84 *18*		
^{208}Po	686.45 *2*		1.19 *49*	0.74 *24*	0.85 *18*		
^{210}Po	1181.4 *1*	0.020 *4*	0.69 *28*	0.42 *14*	0.49 *13*		
^{212}Po	727.17 *4*		1.12 *46*	0.68 *23*	0.79 *18*		
^{214}Po	609.32 *3*		1.3 *5*	0.81 *27*	0.94 *19*		
^{216}Po	549.73 *5*		1.5 *6*	0.88 *29*	1.03 *20*		
^{218}Po	512. *1*		1.6 *6*	0.94 *31*	1.10 *21*		
^{204}Rn	542.9 *5*		1.6 *6*	1.00 *33*	1.14 *21*		
^{206}Rn	575.4 *5*		1.5 *6*	0.93 *31*	1.07 *21*		

TABLE I. Predicted Values of $B(E2)\uparrow$ in Units of (e^2b^2)
See page 16 for Explanation of Tables

			Regional Systematics				Global
Nucleus	E(level) (keV)	Measured Value	$\beta_2/\beta_{2(\mathrm{sp})}$ Fit	IBA SU(3)	Stretched sp. "SU(3)"	Single-j Simulation	Calculation Möller and Nix
^{188}Pt	265.63 *6*	2.60 *47*	2.37 *13*	2.29 *38*	2.12 *48*	2.6 *6*	2.11
^{190}Pt	295.82 *4*	1.75 *22*	2.10 *12*	1.89 *31*	1.99 *45*	2.6 *6*	1.44
^{192}Pt	316.50 *1*	1.91 *6*	1.83 *11*	1.53 *25*	1.73 *40*	2.4 *5*	1.36
^{194}Pt	328.45 *2*	1.66 *6*	1.54 *10*	1.21 *20*	1.35 *31*	2.3 *5*	1.22
^{196}Pt	355.7 *1*	1.40 *4*	1.26 *9*	0.92 *15*	1.02 *23*	2.07 *46*	1.15
^{198}Pt	407.2 *1*	1.06 *5*	0.98 *8*	0.67 *11*	0.73 *17*	1.82 *41*	1.08
^{200}Pt	466. *6*		0.72 *7*	0.46 *8*	0.49 *11*	1.54 *34*	0.359
^{182}Hg	351.8 *5*		1.42 *9*				1.15
^{184}Hg	366.7 *10*	1.94 *45*	1.58 *10*				1.15
^{186}Hg	405.3 *10*	1.37 *23*	1.46 *9*				1.15
^{188}Hg	412.9 *1*		1.34 *9*				1.15
^{190}Hg	416.5 *3*		1.21 *8*				1.15
^{192}Hg	422.8 *3*		1.08 *8*				1.08
^{194}Hg	428.1 *3*		0.96 *8*				1.08
^{196}Hg	426.1 *1*	1.15 *5*	0.83 *7*				0.956
^{198}Hg	411.80 *2*	0.990 *12*	0.71 *7*				0.895
^{200}Hg	367.97 *2*	0.853 *11*	0.59 *6*				0.780
^{202}Hg	439.4 *2*	0.612 *10*	0.48 *6*				0.322
^{204}Hg	436.6 *2*	0.427 *7*	0.37 *5*				0.195
^{206}Hg	1068. *1*		0.273 *48*				
^{190}Pb	773. *2*		0.245 *43*				
^{192}Pb	851.5 *10*		0.249 *43*				0.0090
^{194}Pb	964.2 *10*		0.252 *44*				0.0090
^{196}Pb	1048.6 *10*		0.256 *44*				0.0090
^{198}Pb	1063.5 *3*		0.259 *45*				0.0090
^{200}Pb	1026.5 *2*		0.263 *46*				
^{202}Pb	960.8 *2*		0.266 *46*				
^{204}Pb	899.15 *15*	0.162 *4*	0.270 *47*				
^{206}Pb	803.05 *5*	0.100 *2*	0.273 *48*				
^{208}Pb	4084.7 *5*	0.29 *3*	0.277 *48*				
^{210}Pb	800. *1*	0.051 *15*	0.094 *40*				
^{212}Pb	805. *1*		0.095 *41*				
^{214}Pb	837. *2*		0.097 *41*				
^{200}Po	666. *1*						0.081
^{202}Po	677.4 *5*						0.049
^{204}Po	683.5 *5*						0.025
^{206}Po	700.31 *2*						0.025
^{208}Po	686.45 *2*						0.025
^{210}Po	1181.4 *1*	0.020 *4*	0.094 *40*				
^{212}Po	727.17 *4*		0.21 *6*				
^{214}Po	609.32 *3*		0.37 *7*				
^{216}Po	549.73 *5*		0.57 *9*				
^{218}Po	512. *1*		0.80 *10*				0.0090
^{204}Rn	542.9 *5*						0.672
^{206}Rn	575.4 *5*						0.322

TABLE I. Predicted Values of $B(E2)\uparrow$ in Units of (e^2b^2)
See page 16 for Explanation of Tables

			Global Systematics			Local Systematics	
Nucleus	E(level) (keV)	Measured Value	Bohr and Mottelson	Grodzins	Best Fit	Ross and Bhaduri	Patnaik *et al.*
^{208}Rn	635.8 *2*		1.4 *6*	0.83 *28*	0.96 *20*		
^{210}Rn	643.8 *2*		1.3 *5*	0.82 *27*	0.94 *20*		
^{212}Rn	1273.7 *5*		0.67 *27*	0.41 *14*	0.47 *13*		
^{214}Rn	693.6 *10*		1.2 *5*	0.74 *25*	0.86 *19*		
^{216}Rn	465. *4*		1.8 *7*	1.10 *36*	1.28 *23*		
^{218}Rn	324.04 *15*		2.6 *11*	1.6 *5*	1.82 *27*		
^{220}Rn	240.99 *2*	1.86 *7*	3.5 *14*	2.1 *7*	2.44 *31*	3.19 *36*	2.89 *32*
^{222}Rn	185.99 *4*	2.36 *15*	4.5 *18*	2.7 *9*	3.14 *35*	1.68 *17*	1.33 *13*
^{214}Ra	1381.2 *10*		0.64 *26*	0.39 *13*	0.45 *13*		
^{216}Ra	688.2 *2*		1.3 *5*	0.78 *26*	0.90 *20*		
^{218}Ra	389.2 *2*	1.06 *19*	2.3 *9*	1.36 *45*	1.59 *26*		
^{220}Ra	178.1 *3*		5.0 *20*	2.9 *10*	3.45 *38*		
^{222}Ra	110.9 *1*	4.52 *38*	7.9 *32*	4.7 *16*	5.5 *6*	3.08 *26*	3.49 *29*
^{224}Ra	84.37 *1*	3.99 *16*	10.4 *42*	6.1 *20*	7.2 *8*	5.3 *5*	5.0 *5*
^{226}Ra	67.6 *2*	5.13 *28*	13. *5*	7.6 *25*	8.9 *11*	4.84 *42*	4.62 *40*
^{228}Ra	63.82 *2*	6.01 *49*	14. *6*	7.9 *26*	9.4 *12*	5.65 *38*	6.10 *41*
^{218}Th	688.8 *6*		1.3 *5*	0.80 *27*	0.94 *21*		
^{220}Th	373.3 *3*		2.5 *10*	1.47 *49*	1.72 *28*		
^{222}Th	183.3 *3*	2.98 *25*	5.0 *20*	3.0 *10*	3.49 *39*		
^{224}Th	98.0 *3*		9.4 *38*	5.5 *18*	6.5 *7*	9.7 *22*	7.4 *6*
^{226}Th	72.13 *7*	6.85 *40*	13. *5*	7.4 *25*	8.8 *10*	5.47 *42*	5.93 *46*
^{228}Th	57.76 *1*	7.07 *27*	16. *6*	9.2 *30*	10.9 *14*	7.6 *8*	7.6 *8*
^{230}Th	53.22 *2*	8.04 *10*	17. *7*	9.9 *33*	11.7 *16*	8.2 *9*	8.0 *9*
^{232}Th	49.37 *1*	9.28 *9*	18. *8*	10.5 *35*	12.6 *18*	7.8 *7*	7.9 *7*
^{234}Th	49.55 *6*	7.9 *7*	18. *7*	10.4 *35*	12.4 *18*	10.46 *26*	10.23 *25*
^{228}U	59. *14*		16. *7*	9.4 *31*	11.1 *15*	10.6 *18*	9.3 *12*
^{230}U	51.8 *1*	9.5 *11*	18. *8*	10.6 *35*	12.6 *18*	8.6 *8*	8.9 *8*
^{232}U	47.6 *1*	9.9 *8*	20. *8*	11.4 *38*	13.6 *20*	9.9 *9*	9.9 *9*
^{234}U	43.49 *1*	10.66 *20*	22. *9*	12.4 *41*	14.8 *23*	13.1 *11*	12.1 *10*
^{236}U	45.24 *1*	11.61 *15*	21. *8*	11.8 *39*	14.2 *21*	10.1 *7*	10.5 *7*
^{238}U	44.91 *2*	12.09 *20*	21. *8*	11.8 *39*	14.2 *21*	11.73 *35*	12.02 *36*
^{240}U	44. *2*		21. *9*	11.9 *40*	14.4 *22*	13.19 *42*	12.47 *39*
^{236}Pu	44.6 *2*		22. *9*	12.5 *42*	15.0 *23*	10.93 *28*	11.66 *30*
^{238}Pu	44.08 *5*	12.61 *17*	22. *9*	12.5 *42*	15.1 *23*	12.22 *38*	12.54 *39*
^{240}Pu	42.82 *2*	13.02 *30*	23. *9*	12.8 *42*	15.4 *24*	13.45 *34*	13.09 *33*
^{242}Pu	44.54 *2*	13.40 *16*	22. *9*	12.2 *40*	14.8 *22*	13.60 *41*	13.41 *27*
^{244}Pu	45. *1*	13.68 *16*	22. *9*	12.0 *40*	14.5 *22*	13.48 *27*	13.67 *28*
^{238}Cm	35. *7*		29. *12*	16. *5*	19.8 *34*		
^{240}Cm	43. *3*		24. *10*	13.3 *44*	16.0 *24*		
^{242}Cm	42.12 *6*		24. *10*	13.5 *45*	16.3 *25*	13.91 *40*	14.29 *38*
^{244}Cm	42.9 *1*	14.67 *17*	24. *10*	13.1 *44*	15.9 *24*	14.45 *43*	14.66 *30*
^{246}Cm	42.85 *1*	14.94 *17*	24. *10*	13.0 *43*	15.8 *24*	15.17 *46*	14.95 *30*
^{248}Cm	43.40 *3*	14.99 *18*	23. *10*	12.8 *42*	15.5 *23*		
^{250}Cm	43. *5*		23. *10*	12.8 *42*	15.6 *24*	16.8 *21*	15.7 *20*

TABLE I. Predicted Values of $B(E2)\uparrow$ in Units of (e^2b^2)

See page 16 for Explanation of Tables

Nucleus	E(level) (keV)	Measured Value	Regional Systematics				Global
			$\beta_2/\beta_{2(sp)}$ Fit	IBA SU(3)	Stretched sp. "SU(3)"	Single-*j* Simulation	Calculation Möller and Nix
^{208}Rn	635.8 *2*						0.099
^{210}Rn	643.8 *2*						0.064
^{212}Rn	1273.7 *5*		0.095 *41*				
^{214}Rn	693.6 *10*		0.37 *7*				
^{216}Rn	465. *4*		0.79 *10*	0.87 *26*	2.08 *27*	0.89 *14*	
^{218}Rn	324.04 *15*		1.31 *12*	1.17 *34*	2.81 *36*	1.41 *22*	0.064
^{220}Rn	240.99 *2*	1.86 *7*	1.91 *14*	1.51 *44*	3.38 *44*	2.03 *32*	0.837
^{222}Rn	185.99 *4*	2.36 *15*	2.55 *15*	1.9 *6*	4.0 *5*	2.75 *43*	1.67
^{214}Ra	1381.2 *10*		0.097 *41*				
^{216}Ra	688.2 *2*		0.57 *9*				
^{218}Ra	389.2 *2*	1.06 *19*	1.31 *12*	1.59 *47*	3.34 *43*	1.37 *21*	0.016
^{220}Ra	178.1 *3*		2.21 *14*	2.0 *6*	4.3 *6*	2.00 *31*	0.895
^{222}Ra	110.9 *1*	4.52 *38*	3.19 *16*	2.4 *7*	5.0 *6*	2.73 *43*	1.75
^{224}Ra	84.37 *1*	3.99 *16*	4.21 *17*	2.9 *9*	5.7 *7*	3.6 *6*	3.70
^{226}Ra	67.6 *2*	5.13 *28*	5.22 *19*	3.4 *10*	6.5 *8*	4.5 *7*	4.20
^{228}Ra	63.82 *2*	6.01 *49*	6.19 *20*	4.0 *12*	7.0 *9*	5.4 *8*	5.45
^{218}Th	688.8 *6*		0.80 *10*				
^{220}Th	373.3 *3*		1.91 *14*	2.5 *7*	4.2 *6*	1.92 *30*	0.036
^{222}Th	183.3 *3*	2.98 *25*	3.19 *16*	3.0 *9*	5.3 *7*	2.66 *42*	1.59
^{224}Th	98.0 *3*		4.53 *18*	3.6 *10*	6.1 *8*	3.5 *6*	3.95
^{226}Th	72.13 *7*	6.85 *40*	5.82 *20*	4.2 *12*	6.9 *9*	4.4 *7*	4.47
^{228}Th	57.76 *1*	7.07 *27*	7.04 *22*	4.8 *14*	7.8 *10*	5.4 *8*	5.90
^{230}Th	53.22 *2*	8.04 *10*	8.16 *24*	5.5 *16*	8.3 *11*	6.5 *10*	6.85
^{232}Th	49.37 *1*	9.28 *9*	9.17 *26*	6.2 *18*	8.8 *11*	7.6 *12*	7.36
^{234}Th	49.55 *6*	7.9 *7*	10.08 *28*	7.0 *21*	9.4 *12*	8.7 *14*	7.88
^{228}U	59. *14*		7.31 *22*	5.6 *17*	8.1 *10*	5.4 *8*	6.21
^{230}U	51.8 *1*	9.5 *11*	8.63 *25*	6.4 *19*	9.1 *12*	6.5 *10*	6.85
^{232}U	47.6 *1*	9.9 *8*	9.78 *28*	7.2 *21*	9.7 *13*	7.7 *12*	8.06
^{234}U	43.49 *1*	10.66 *20*	10.76 *30*	8.1 *24*	10.2 *13*	8.9 *14*	8.60
^{236}U	45.24 *1*	11.61 *15*	11.60 *32*	9.0 *26*	10.8 *14*	10.1 *16*	8.60
^{238}U	44.91 *2*	12.09 *20*	12.32 *34*	9.9 *29*	11.5 *15*	11.2 *18*	8.79
^{240}U	44. *2*		12.93 *36*	10.9 *32*	11.6 *15*	12.4 *19*	9.36
^{236}Pu	44.6 *2*		11.96 *33*	10.1 *30*	11.9 *15*	10.1 *16*	8.98
^{238}Pu	44.08 *5*	12.61 *17*	12.70 *36*	11.1 *33*	12.5 *16*	11.4 *18*	9.36
^{240}Pu	42.82 *2*	13.02 *30*	13.31 *37*	12.2 *36*	13.2 *17*	12.6 *20*	9.95
^{242}Pu	44.54 *2*	13.40 *16*	13.81 *39*	13.3 *39*	13.4 *17*	13.8 *22*	9.75
^{244}Pu	45. *1*	13.68 *16*	14.24 *40*	14.5 *43*	13.5 *17*	14.9 *23*	9.55
^{238}Cm	35. *7*		12.87 *36*	12.4 *37*	12.5 *16*	11.3 *18*	9.75
^{240}Cm	43. *3*		13.50 *38*	13.6 *40*	13.2 *17*	12.7 *20*	9.55
^{242}Cm	42.12 *6*		14.00 *40*	14.8 *44*	13.9 *18*	14.0 *22*	10.4
^{244}Cm	42.9 *1*	14.67 *17*	14.41 *41*	16.0 *47*	14.1 *18*	15.3 *24*	10.8
^{246}Cm	42.85 *1*	14.94 *17*	14.76 *42*	17. *5*	14.2 *18*	16.4 *26*	10.8
^{248}Cm	43.40 *3*	14.99 *18*	15.05 *43*	19. *6*	14.3 *18*	17.4 *27*	10.4
^{250}Cm	43. *5*		15.31 *44*	20. *6*	14.3 *19*	18.3 *29*	10.4

TABLE I. Predicted Values of $B(E2)\uparrow$ in Units of (e^2b^2)

See page 16 for Explanation of Tables

Nucleus	E(level) (keV)	Measured Value	Global Systematics Bohr and Mottelson	Global Systematics Grodzins	Global Systematics Best Fit	Local Systematics Ross and Bhaduri	Local Systematics Patnaik *et al.*
^{244}Cf	41. *5*		26. *10*	14.3 *48*	17.3 *27*		
^{248}Cf	42. *1*		25. *10*	13.7 *46*	16.7 *26*		
^{250}Cf	42.7 *2*	16.0 *16*	24. *10*	13.4 *44*	16.4 *25*		
^{252}Cf	45.72 *5*	16.7 *11*	23. *9*	12.4 *41*	15.2 *22*		
^{254}Fm	44.99 *2*		24. *10*	13.0 *43*	16.0 *24*		

TABLE I. Predicted Values of $B(E2)\uparrow$ in Units of (e^2b^2)
See page 16 for Explanation of Tables

Nucleus	E(level) (keV)	Measured Value	Regional Systematics $\beta_2/\beta_{2(\mathrm{sp})}$ Fit	IBA SU(3)	Stretched sp. "SU(3)"	Single-j Simulation	Global Calculation Möller and Nix
^{244}Cf	41. *5*		14.50 *41*	18. *5*	14.4 *19*	15.3 *24*	11.4
^{248}Cf	42. *1*		15.12 *43*	20. *6*	14.7 *19*	17.8 *28*	11.0
^{250}Cf	42.7 *2*	16.0 *16*	15.37 *44*	22. *6*	14.8 *19*	18.9 *30*	11.4
^{252}Cf	45.72 *5*	16.7 *11*	15.60 *45*	23. *7*	14.8 *19*	19.8 *31*	10.8
^{254}Fm	44.99 *2*		15.82 *46*	27. *8*	15.4 *20*	21.1 *33*	11.2

FIGURE III. Summary Graphs of $B(E2)\uparrow$ Predictions for Helium to Fermium Isotopes
See page 13 for Explanation of Figures

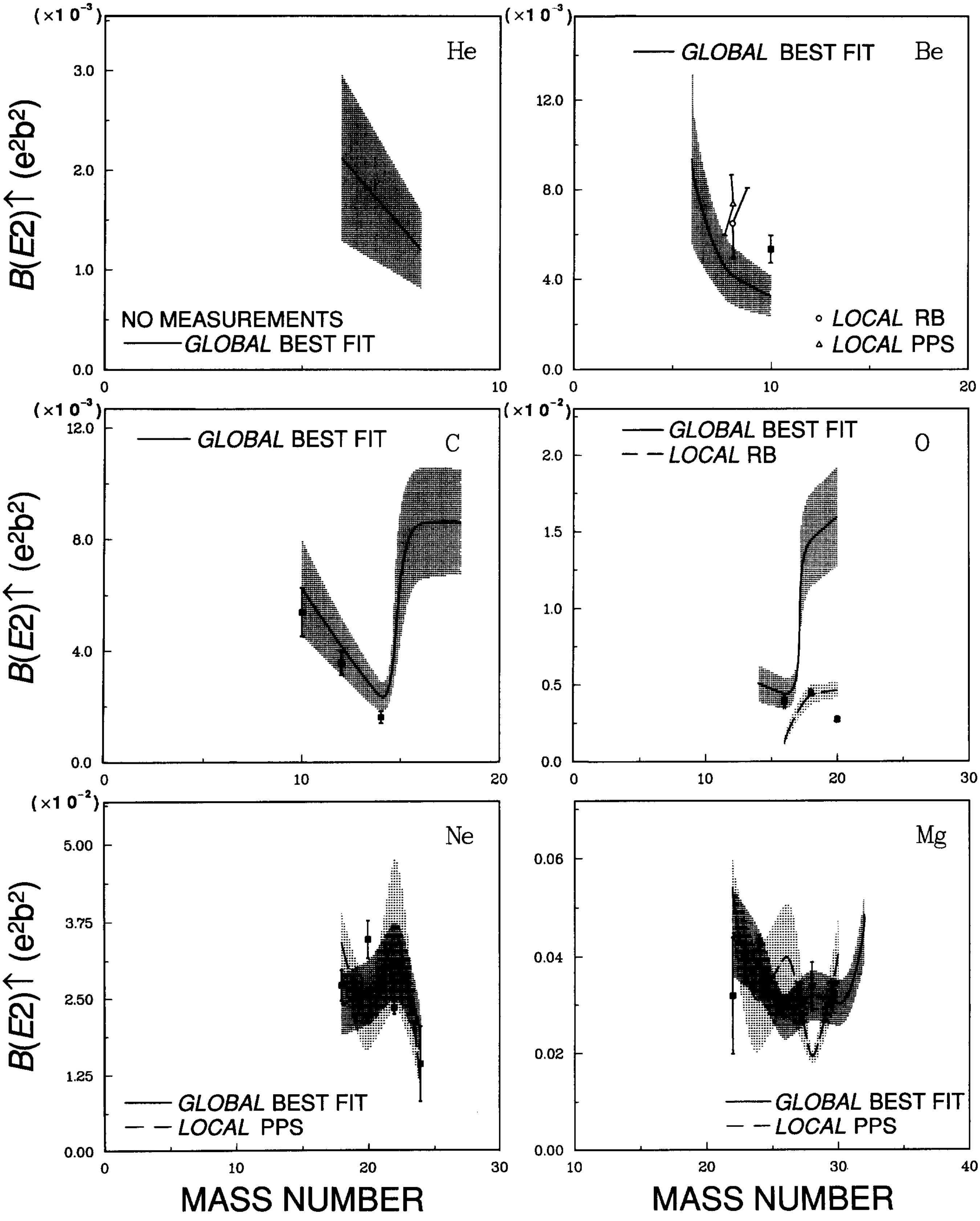
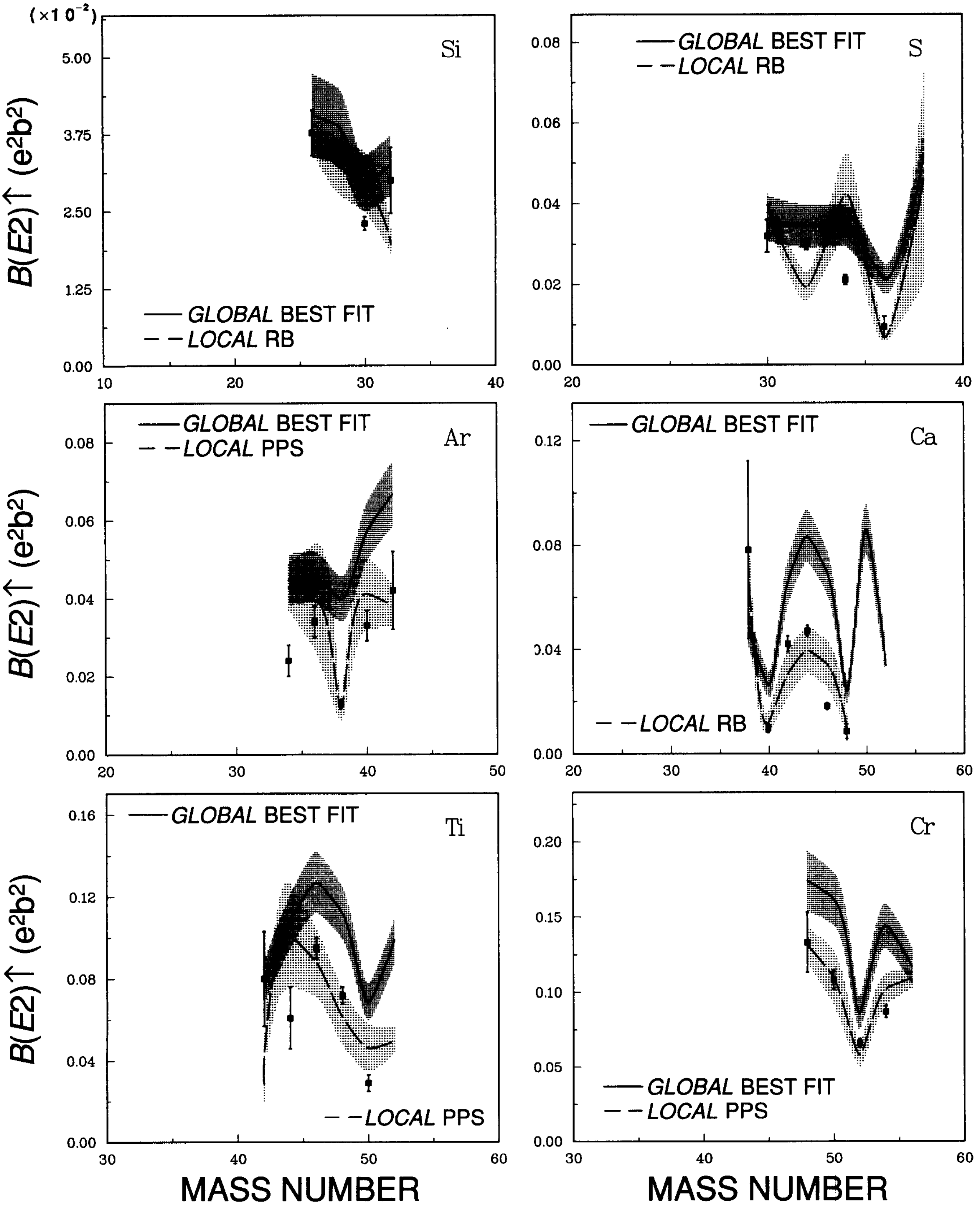


FIGURE III. Summary Graphs of $B(E2)\uparrow$ Predictions for Helium to Fermium Isotopes
See page 13 for Explanation of Figures



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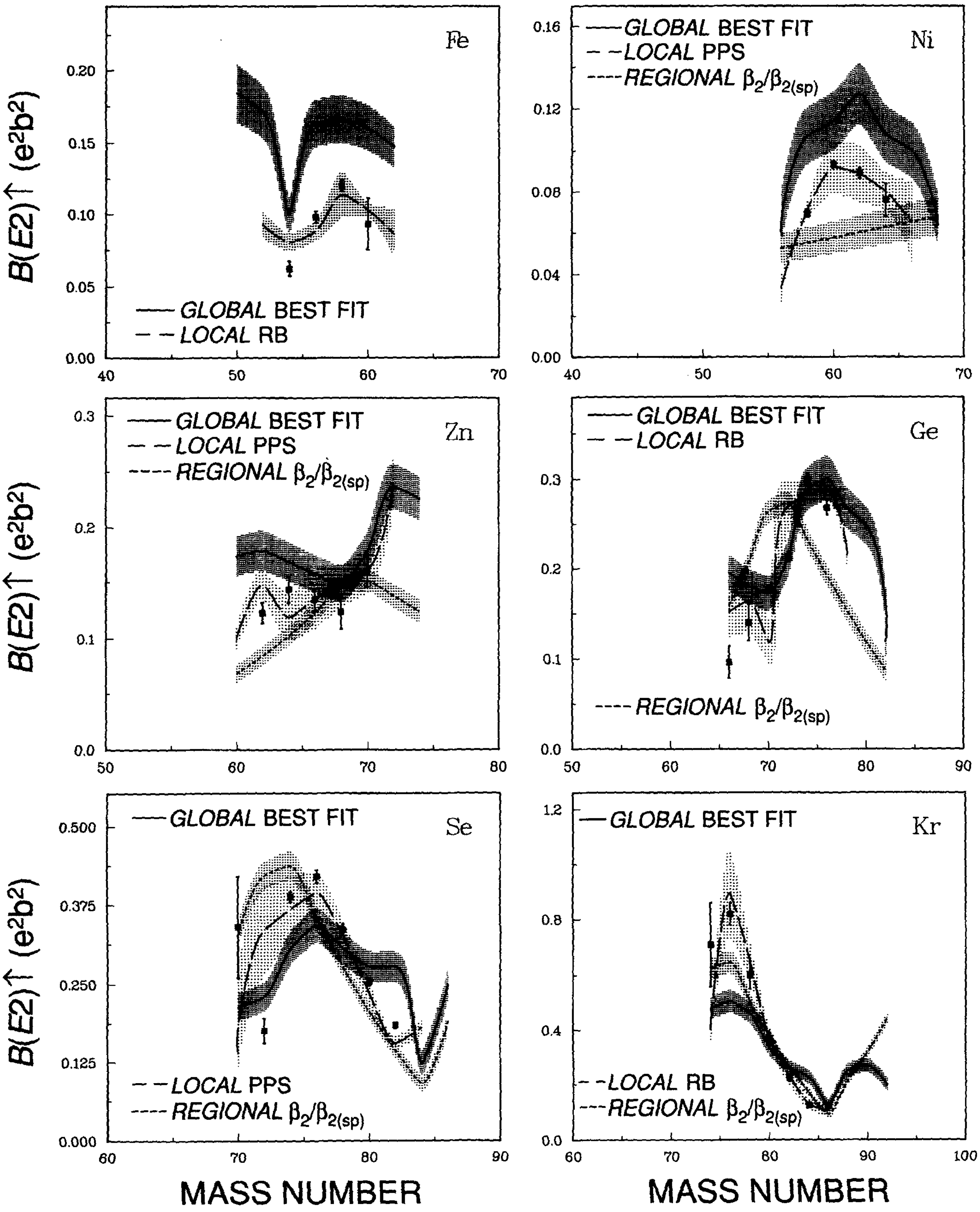
See page 13 for Explanation of Figures



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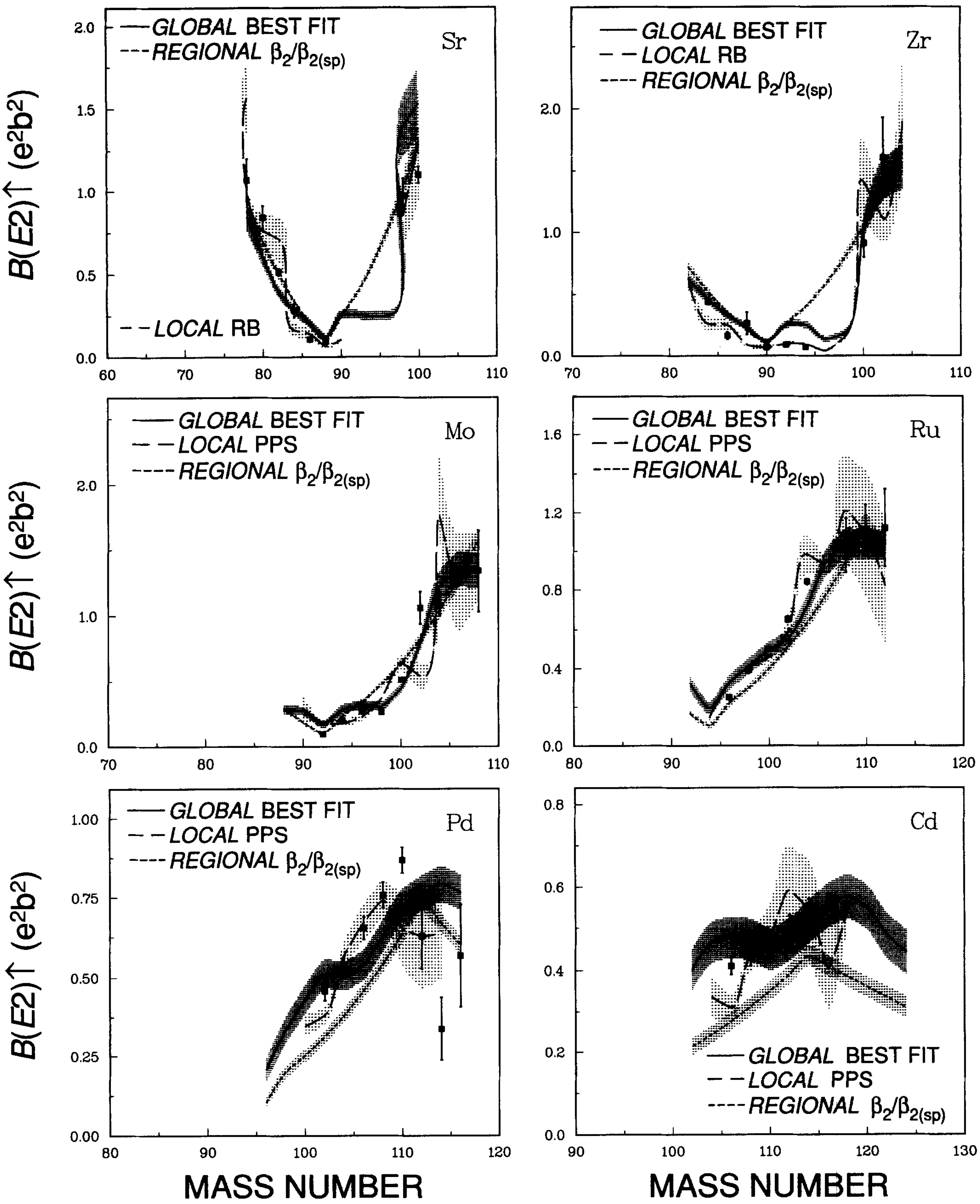

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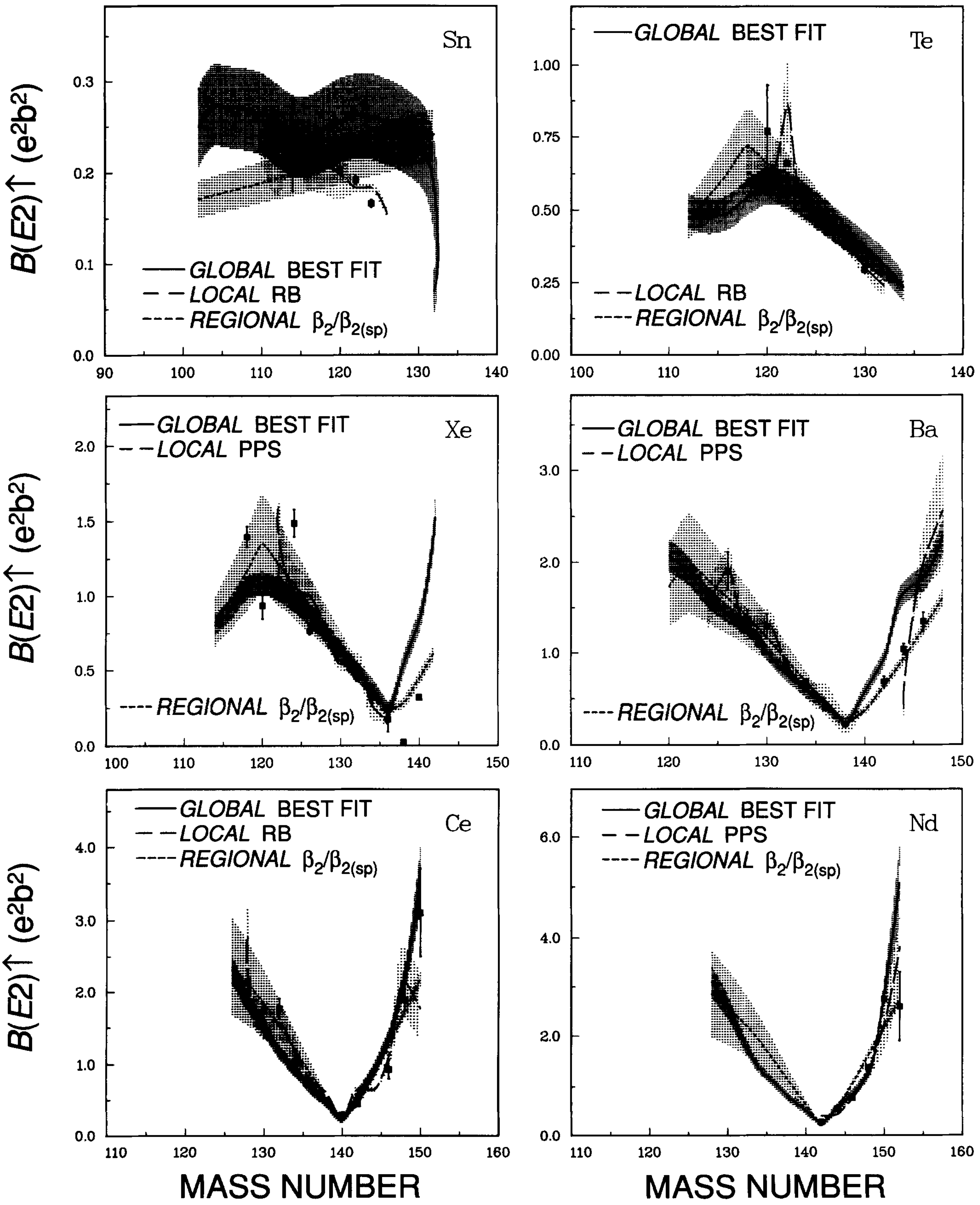
See page 13 for Explanation of Figures



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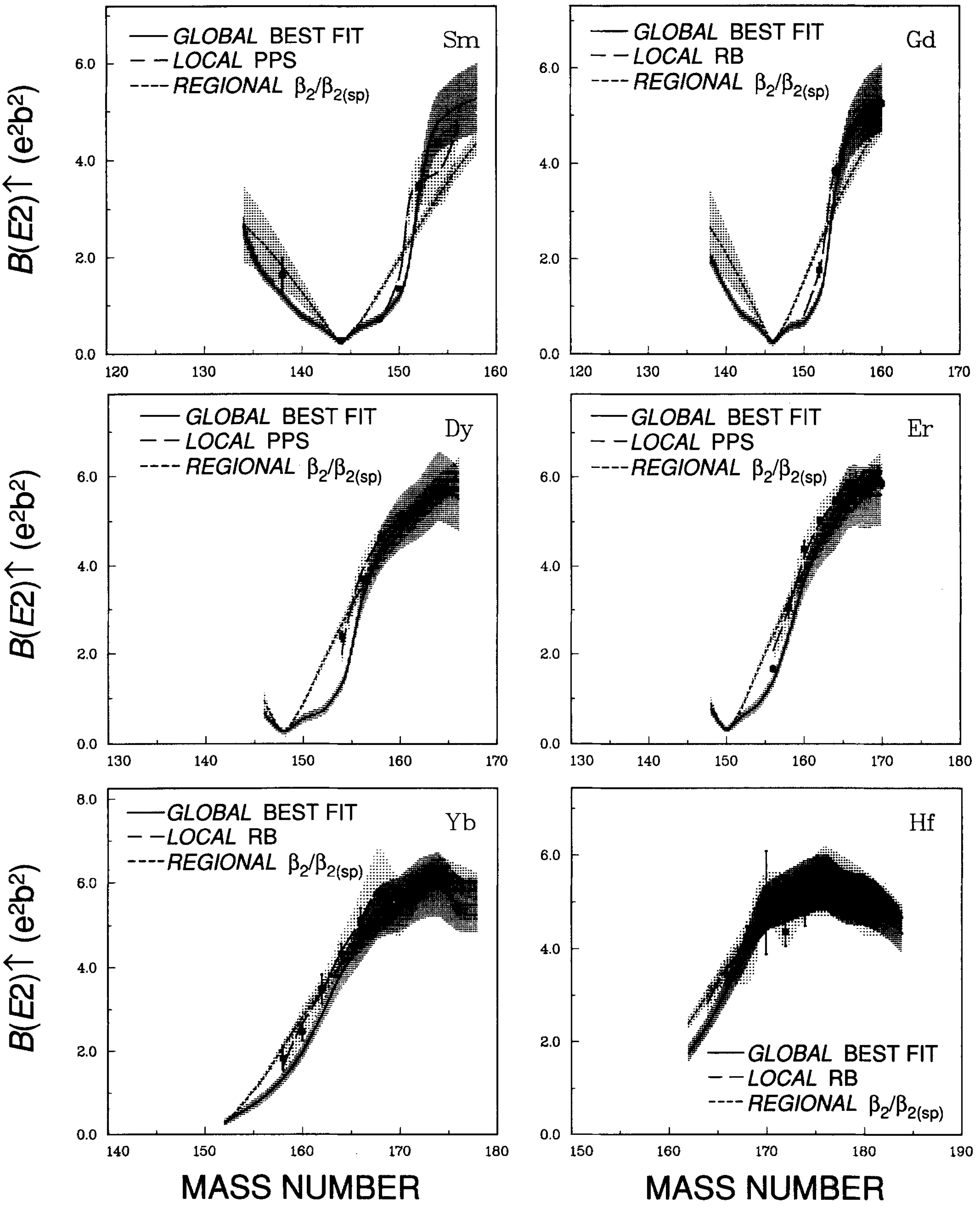
See page 13 for Explanation of Figures



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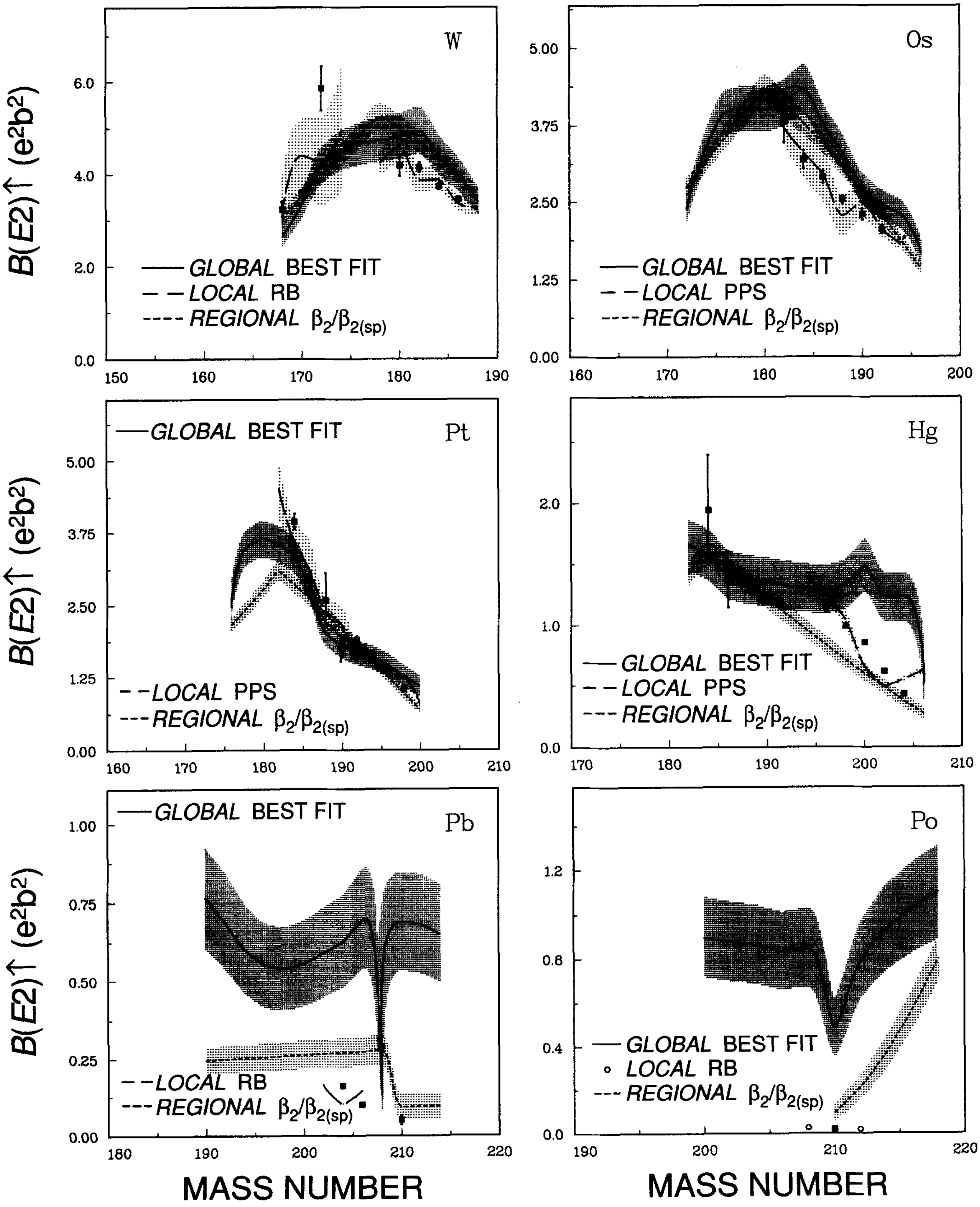
See page 13 for Explanation of Figures



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See page 13 for Explanation of Figures

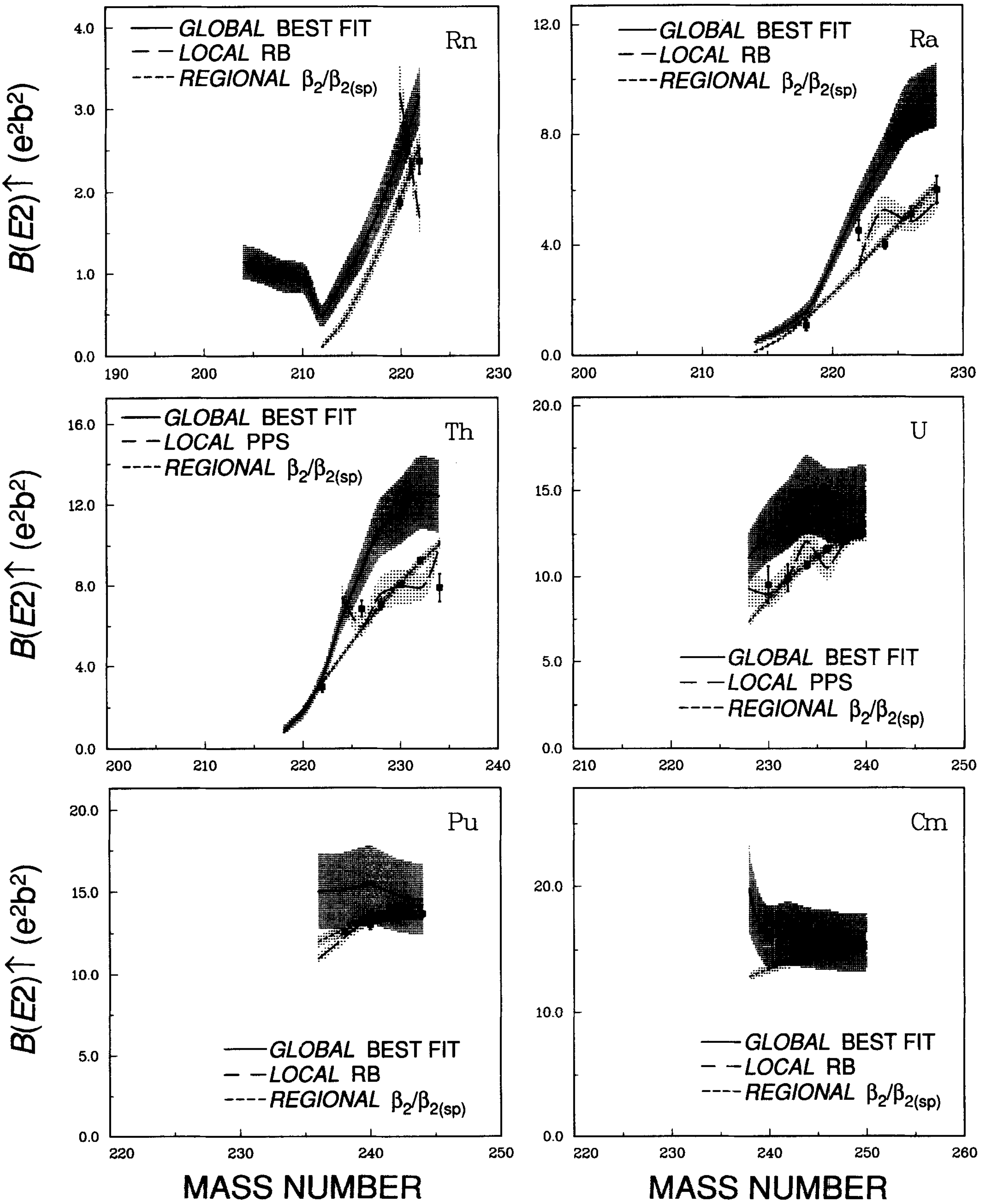

FIGURE III. Summary Graphs of $B(E2)\uparrow$ Predictions for Helium to Fermium Isotopes
See page 13 for Explanation of Figures