

# FLAIR Collaboration: a Status Report

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The proposed Facility for Low-energy Antiproton and Heavy-Ion Research combine low energy antiproton beams and stable and instable highly-charged ions for atomic, nuclear and particle physics research. The key features of the facility will be the cooled, highly intense beams of antiprotons and bare and few-electron heavy ions. The combination of two decelerators- the Low-energy Storage Ring LSR and the Ultra-low energy Storage Ring, USR- and different ion/ antiproton traps will provide beams of excellent emittance covering energies from 100 MeV/u down to few eV. Over 15 different experiments have been proposed to be located at FLAIR and use the provided beams. Details about scientific goal and technical aspects of these experiments are presented in the FLAIR Technical Proposal [1].

Based on the recommendations of the Program Advisory Committee (APPA-PAC), the Scientific and Technical Issues working group (STI) decided in summer 2005 to include the proposed research program with low-energy antiprotons as an integral part of the FAIR project. Due to the fact the FLAIR and SPARC research programs rely largely on the same accelerator infrastructure the committee suggested a strong cooperation between the two collaborations.

With this decision, the FLAIR collaboration received the 'green light' to proceed to the preparation of the technical developments. As an immediate consequence of this decision, the FLAIR building was integrated in the FAIR general layout and became part of the civil construction planning. Based on the experimental needs presented in the Technical Proposal by different experiments, a concerted activity for design optimisation of the facility was performed during the second half of 2005. The optimised building layout presented in the figure 1 try to satisfy the requests of the planned experimental setups under the observance of security and radiation protection rules and cost saving. Together with the radiation Protection group at GSI, detailed simulations of radiation field produced in the different experimental areas and the needed shielding have been performed. Details about these simulations are presented in the present Annual Report [1].

Another important activity of the collaboration is connected to the integration of the LSR in the larger frame of the FAIR accelerator system. For most of the FLAIR experiments, the antiproton and ion beams will be delivered via LSR and USR. The large diversity of the experiments planned at FLAIR requires a complex beam sharing inside the facility (see figure 2) and a good matching with the FAIR accelerator system.

In December 2005 a FLAIR-SPARC meeting was organised at GSI [2]. Part of the meeting was dedicated to presentation of experiment proposals with highly-charged

ions at FLAIR. Also the building layout and the Baseline Technical Report, due December 15, 2005, were discussed and accepted by the participants.

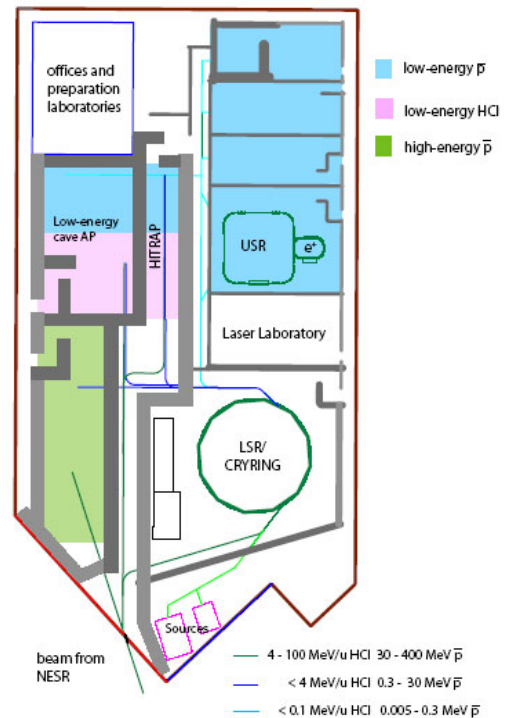


Figure 1: Layout of the FLAIR building.

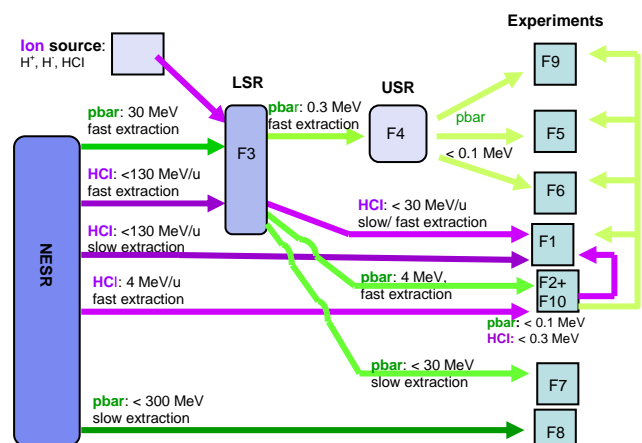


Figure 2: Beam distribution scheme at FLAIR.

## References

- [1] G. Fehrenbacher et al., present Report
- [2] <http://www.oew.ac.at/smi/flair/>