
FLAIR steering committee report

E. Widmann

FLAIR users meeting

GSI, March 15-16, 2004

Topics

- ***Conferences and workshops***
- ***Letter of intent***
- ***Agenda and goals of the meeting***
 - New ideas
 - LEPTA (positron storage ring) (-> A. Sidorin)
 - Antiprotonic RI and SuperFRS (-> C. Scheidenberger)
 - AGATA @ FLAIR (-> M. Gorska)
 - Antideuterons (-> Y. Yamazaki)
 - FLAIR and SPARC, NUSTAR
 - Technical issues
 - Towards a technical report
 - Funding issues



Conferences and workshops

- ***JINR – GSI Workshop Dubna, December 20, 2003***
 - Participation of JINR in future project at GSI
 - Initiative I. Meshkov to discuss LEPTA (positron ring) (-> Talk by A. Sidorin)
 - Presentation EW
 - FLAIR mentioned in overview talk by H. Gutbrod
- ***XLII International Winter Meeting On Nuclear Physics, Bormio (Italy), January 25 – February 1, 2004***
 - Invited talk by EW on recommendation by H. Gutbrod
 - One of 4 invited talks on future facility!
 - Proceedings to appear in U Milano book (*authorship policy*)
- ***Presentations of GSI Future Project***
 - India March 15-16 (now), H-J. Kluge
 - China April 15-16, T. Stöhlker



Status of letter of intent

■ **Additions**

- Strangeness -2 production (-> talk D. Grzonka)
- Theoretical contributions
 - Plunien, Soff, Labzowsky: *Antidrogen and fundamental symmetries*
 - Pachuzki & Shabaev: *QED tests with antiprotonic atoms*
- Additional authors: 47 institutions, 14 countries ->slide
- Topics ->slide
- Detailed description of HITRAP

■ **Resubmission on Feb. 23, 2004**

- Improved estimation of pbar rates (-> talk C. Welsch)



FLAIR Community

- **Austria** (Vienna IMEP, TU)
 - **Canada** (York)
 - **Denmark** (Aarhus U, ISA)
 - **France** (P. & M. Curie, Paris)
 - **Germany** (GSI, Dresden, Frankfurt, Freiburg, München, Giessen, Heidelberg, Jülich, Mainz, Tübingen)
 - **Hungary** (Budapest, Debrecen U, ATOMKI)
 - **Italy** (Bologna, Firenze, Genova, Torino)
 - **Japan** (Tokyo, Saitama (RIKEN))
 - **Netherlands** (Amsterdam U, FOM)
 - **Poland** (Warsaw U, Soltan Inst.)
 - **Russia** (Moscow, St. Petersburg)
 - **Sweden** (Stockholm U, Manne Siegbahn Laboratory)
 - **United Kingdom** (Swansea)
 - **USA** (Albuquerque, Harvard,
- 47 institutions, 14 countries



FLAIR Physics Topics with Antiprotons

- ***Spectroscopy for tests of CPT and QED***
 - Antiprotonic atoms (pbar-He, pbar-p), antihydrogen

Low-energy
High-brilliance
Beams
- ***Gravitation of antimatter***
 - Trapped and laser-cooled antihydrogen
- ***Atomic collisions***

USR

 - Ionization, energy loss, antimatter-matter collisions
- ***Antiprotons as hadronic probes***

DC beam,
availability of
RI

 - X-rays of light antiprotonic atoms: low-energy QCD
 - X-rays of neutron-rich nuclei: nuclear structure (halo)
 - Antineutron interaction
 - Strangeness -2 production
- ***Medical applications: tumor therapy***

Higher energy



FLAIR – A Facility for Low-energy Antiproton and Ion Research @ GSI

■ **NESR**

- Pbar & Ions
30 – 400 MeV

■ **LSR:**

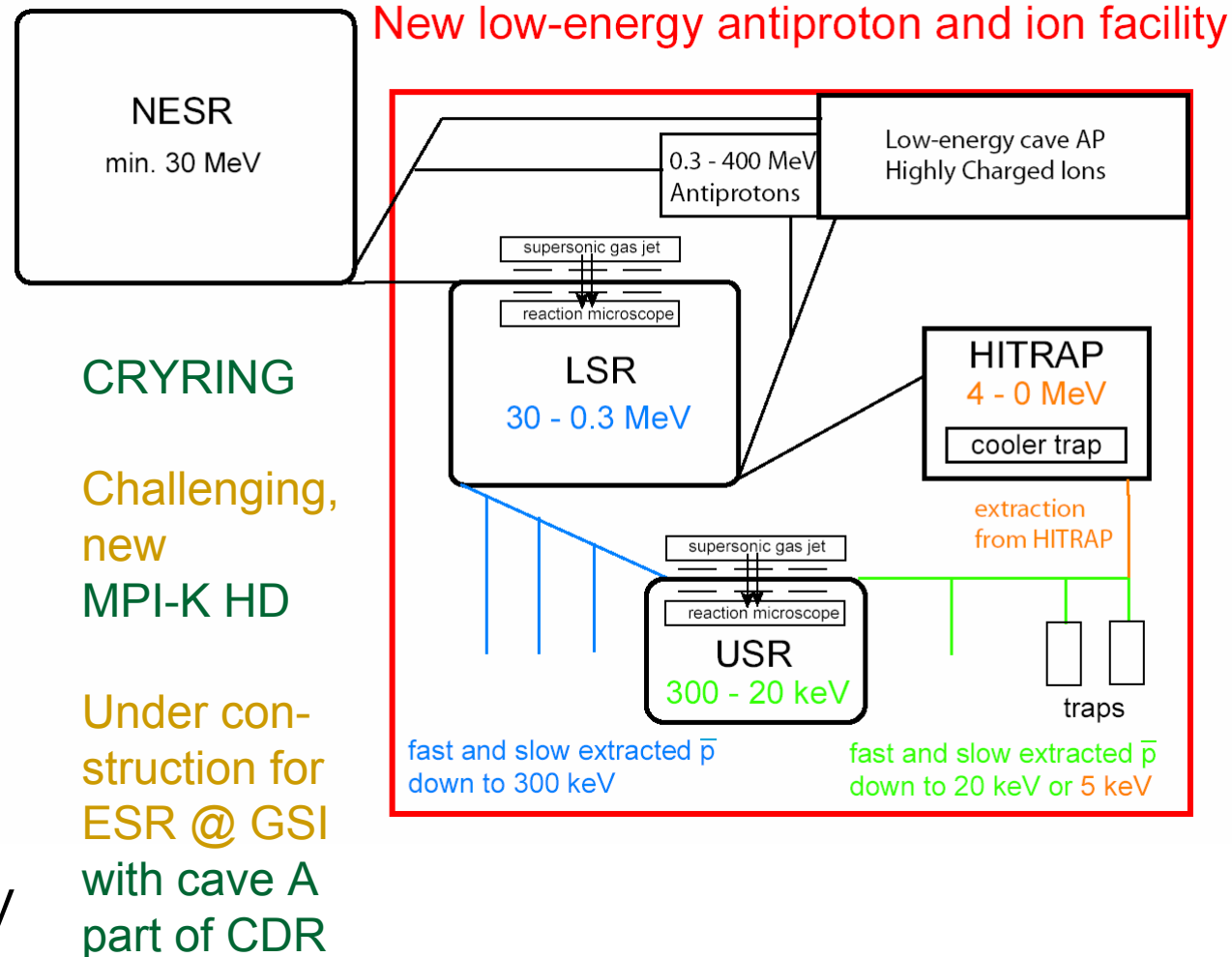
- Standard ring
- Min. 300 keV

■ **USR**

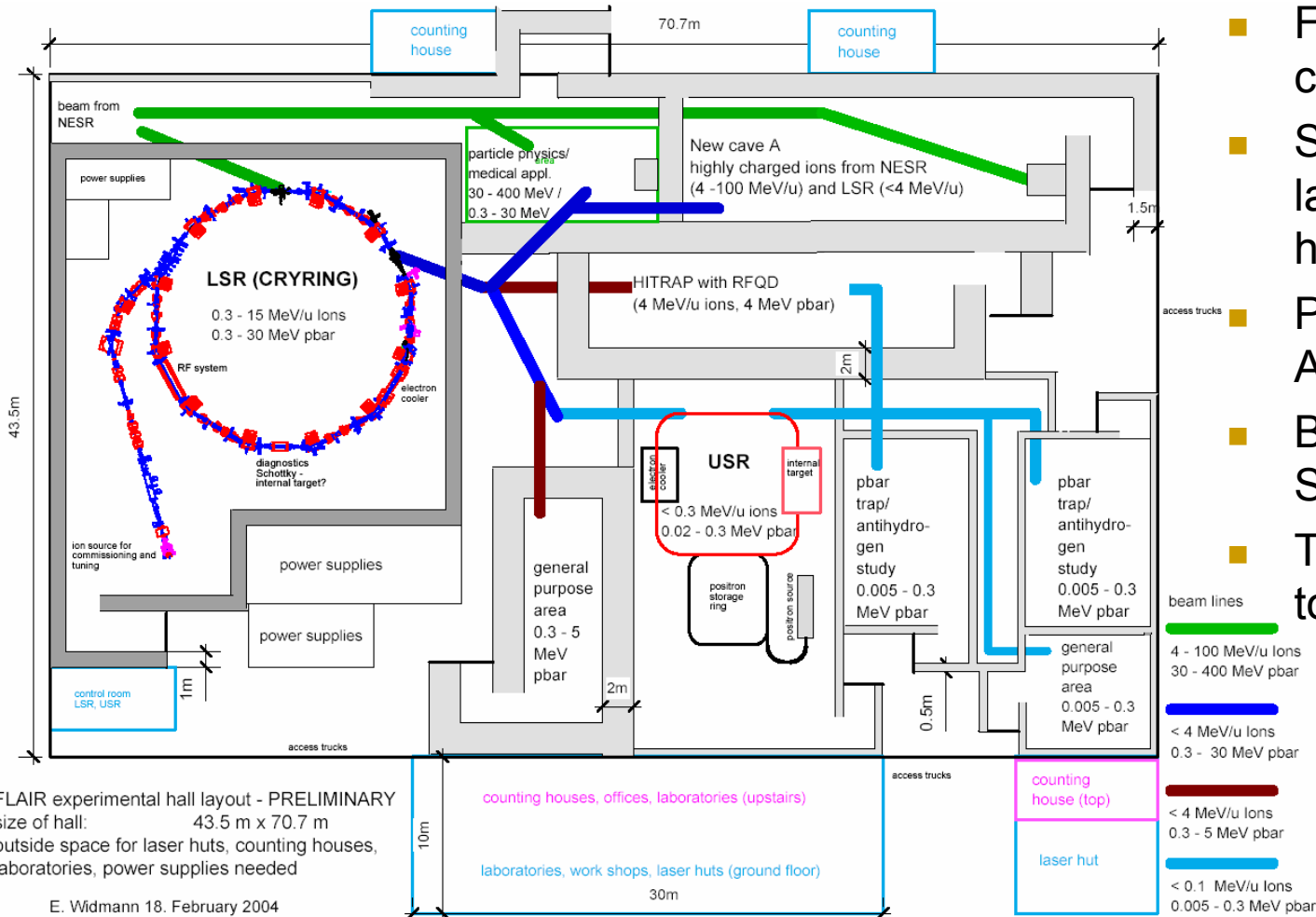
- Electrostatic
- Min 20 keV

■ **HITRAP**

- Pbar and ions
- Stopped & extracted @ 5 keV



Layout of FLAIR Hall



- Width limited by other constraints
- Fairly realistic concrete shielding
- Space for laboratories, laser huts, etc.?
- Possibility for AGATA?
- Beamline to SuperFRS?
- To be discussed tomorrow



Agenda Monday March 15

Monday 15 March 2003

- | | | |
|-------|--------------------------|--|
| 14:00 | N. N. | Welcome |
| 14:15 | J. Eschke* | How GSI proceeds with the Letter of Intent and what GSI expects from a Technical Report |
| 14:30 | E. Widmann | Report of the steering committee: <ul style="list-style-type: none">- new version of the Letter of Intent- layout of the hall- agenda and goals of the meeting |
| 15:00 | H. Danared | CRYRING at FLAIR |
| 15:15 | C. Welsch | USR – Advances & Antiproton rates |
| 15:35 | _____ coffee break _____ | |
| 16:00 | D. Grzonka | $S = -2$ baryonic matter |
| 16:20 | A. Sidorin | Positron storage ring for antihydrogen production |
| 16:40 | Y. Yamazaki | Anti-deuteron production and experiments |
| 17:00 | C. Scheidenberger | Low-energy branch of Super-FRS. Antiprotons and rare isotopes |
| 17:30 | M. Gorska | AGATA project at GSI |
| 19:00 | _____ buffet _____ | |



Agenda Tuesday March 16

Tuesday 16 March 2004

- 9:00 P. Belochitskii Extra low energy antiproton ring (ELENA)
for pbar deceleration from the AD at CERN
- 9:30 K. Killian Antideuteron production
- 9:50 O. Skeppstedt CRYRING and FLAIR
- 10:00 _____ coffee break _____
- 10:30 T. Radon / Radiation safety aspects of FLAIR
G. Fehrenbacher
- 10:45 Technical and conceptual discussions
- LSR: parameters, internal target, ion sources
- USR: parameters, vacuum
- 12:00 _____ lunch _____
- 13:30 more technical discussions
relationship SPARC, NUSTAR
positron storage ring
- 15:00 _____ coffee break _____
- 15:00 Meeting of the steering committee:

Please note: Additional short presentations (with or without transparencies) are welcome.
One of the discussion sessions on Tuesday might be the perfect place for your contribution.

