PAUL SCHERRER INSTITUT

PSI

Wir schaffen Wissen – heute für morgen

Paul Scherrer Institut

Tilman Rohe

Plans for pion irradiation in 2014

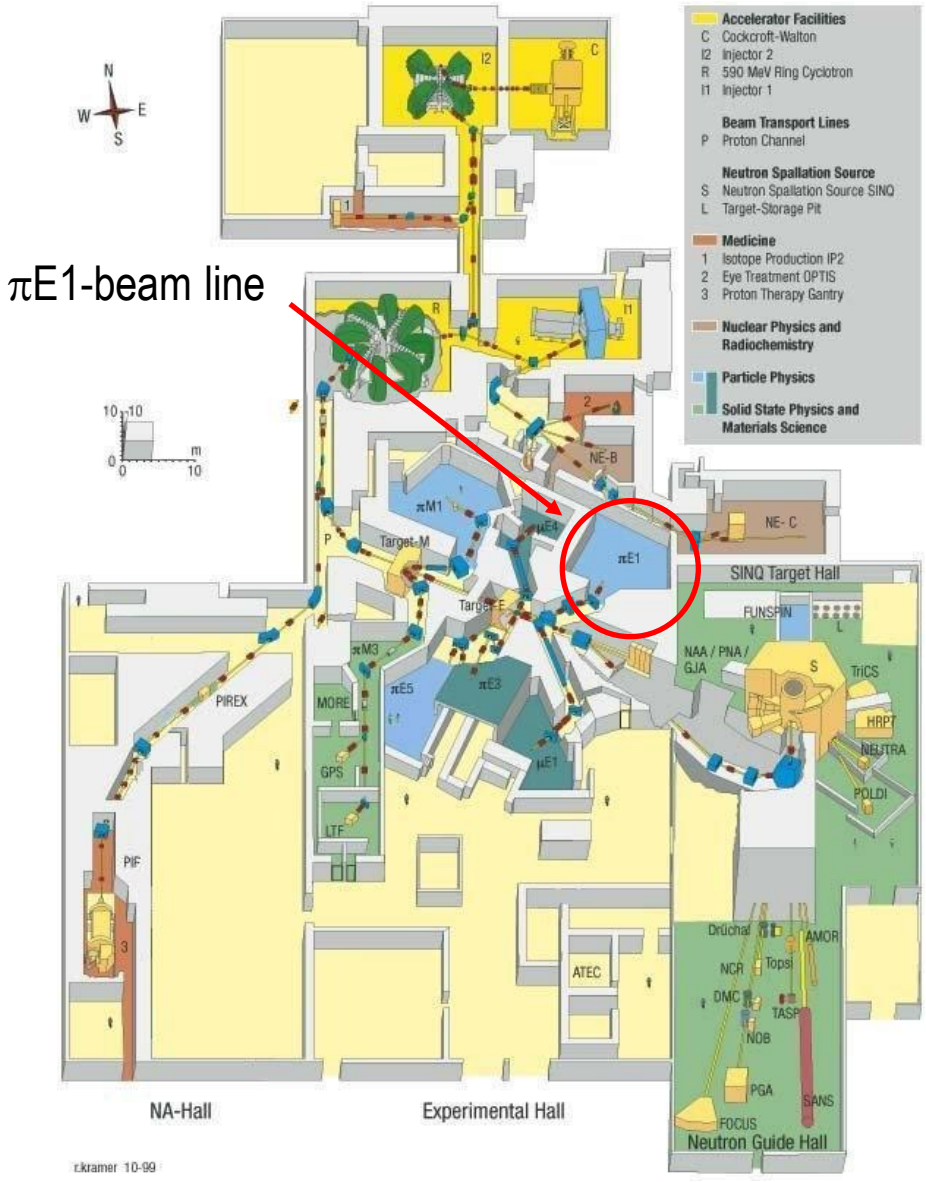
Facility

πE1 beam line at PSI

- Secondary beam line in proton accelerator
- Intense pion beam (a few 10^9 π/s)
- "Medium" energy (~280 MeV/c)
- Beam line is used by
  - Particle physics: MuSan, AlCup, …
  - μSR (material science): Dolly
- 2014 will be overboked
- 2015 even worse (shorter beam period)

Possible access

- "Test beam"
  - Informal, no written proposal, just ask
  - Low priority (no chance)
- Scientific experiment
  - Written proposal (dead line 06.01.2014)
  - Presentation at the user's meeting (27.-29.1.2014)
  - Beam time granted by committee
  - We are in direct competition with particle physics experiments



Application Strategy

Strong scientific case

- Stress the material **science**
  - Pion irradiation data is important to understand how to model "pion damage" with neutrons and protons for "new" materials
  - List papers (in reviewed journals) resulting from the last irradiation (2009?)
    - Please send me the references of all papers reporting on pion irradiated samples by 01.12.2013
- Stress that PSI profits from this activity
  - Visibility in the papers (at least in the acknowledgements)
    NB: In the past this did not work well. This does not strengthen our position!

Modest period

- Only about 4 weeks (1 needed to prepare the beam line)
- Limits to
  - **~100 samples**
  - **fluences of max 10^{15} pi/cm^2 (~1 week in the focus)**

Support

- **Irradiation must be run by RD50**
- Human resources
  - PSI: beam adjustment, link to local groups (1 person)
  - CERN: irradiation table, spectrometer (2 persons, not the whole time)
  - RD50:
    - Preparation of samples
    - Running the irradiation (dosimetry, placing and removing the samples, book keeping)
    - At least 2 persons during the irradiation +/- 1 week