

# H<sup>-</sup> Injection Mini-Workshop

- Dates: December 9-10, 2004
- Invitees:
  - BNL: J. Wei, YY Lee, D. Raparia
  - LANL: R. Macek, T. Spickermann, A. Jason
  - SNS: M. Plum
  - RAL: G. Rees, C. Warsop
  - KEK/JAERI: M. Kinsho, K. Satoh
  - U. New Mexico: H. Bryant
  - Fermilab: C. Hill, PD group
- Topics:
  - Review of H<sup>-</sup> injection at existing machines and machines under construction:
    - Fermilab Booster
    - BNL Booster
    - KEK Booster
    - PSR
    - ISIS
    - SNS
    - JPARC
  - Features of 8 GeV H<sup>-</sup> ions

# Document on 8 GeV H<sup>-</sup> Ions

## OUTLINE

1. Introduction
2. Atomic Physics of 8 GeV H<sup>-</sup> ions
  - 2.1. General physics of H<sup>-</sup> ions
  - 2.2. Blackbody radiation stripping
  - 2.3. Magnetic field stripping
  - 2.4. Residual gas stripping
  - 2.5. Lifetime of Stark states of hydrogen atoms
  - 2.6. Population of Stark states of hydrogen atoms
3. Foil Physics
  - 3.1. Stripping efficiency
  - 3.2. Multiple Coulomb scattering
  - 3.3. Large angle Coulomb scattering
  - 3.4. Energy deposition and heating analysis (MARS)
  - 3.5. Heating and stress analysis (ANSYS)
  - 3.6. Radiation activation
4. Beam Physics of an 8 GeV H<sup>-</sup> transport line
  - 4.1. Collimation
  - 4.2. Energy jitter correction
  - 4.3. Radiation activation
5. Summary