AMT-2
Magnets for a Super-SPS

1. magnet specification for superconducting, pulsed magnets (dipoles and quadrupoles) that fit in the SPS tunnel
   - peak field
   - aperture
   - field quality
   - cross-section, foot-print, volume, mass
2. minimum required cryogenics for the upgrade
3. analysis of the transfer line upgrade

1. Magnet specification

- define available geometric envelope in the SPS tunnel (CERN_____)
  - W x H x L, mass, geometric and lattice constraints, max power
- define specification for performance of dipoles and quadrupoles (CERN_____)
  - lattice, Bmax, dB/dt, Gmax, D

Juy 2004

- review technology for pulsed magnets (GSI_____)
  - strand and cable designs (including report of INTAS work)
  - magnet designs
  - pulsed performance
    - B, dB/dt, G, D, AC loss, margin, number of pulses

Dec 2004

- produce a conceptual design for dipoles and quadrupoles (2 options, Rutherford and ICS) (_____)
  - strand specification and cable design, Jop, Top, dT
  - magnet cross section
  - field quality
  - AC loss
  - Mechanical structure design

Jul 2005

2. Cryogenics requirements

- based on the reviewed performance of pulsed magnets and the conceptual design(s) established determine (_____)
  - cryogenics needs for normal operation
    - power
    - massflow
  - cryogenic needs for cool-down and warm-up
  - preliminary design of the cryogenic plant

3. Transfer lines

- specify optics for the transfer lines at doubled injection energy into the LHC (1 TeV) (CERN_____)

Jul 2004

- specify the operating conditions for the magnets of the transfer lines (_____)
- conceptual design of the magnets for the transfer lines (_____)

Jul 2005

4. Summary

- evaluate the cost of the upgrade and associated time schedule
- define provisional schedule for implementation in the accelerator complex
- identify critical items where R&D is needed
  - area of shared R&D (e.g. GSI-IAF work)
  - area of specific R&D
- final report on the study