

Mandate of an Inter-Departmental Working Group on **Proton Accelerators for the Future (PAF)**

In preparation for the strategic decisions foreseen to be taken in 2006 and 2010 concerning future facilities at CERN, and in parallel with the R&D on CLIC for a possible Lepton Facility, an inter-departmental working group aiming at the definition of a baseline scenario of the possible development and upgrade of the present Proton Accelerator Complex is mandated below. The working group is composed of a convener, Roland Garoby, and about seven members from different departments. The group reports to the DG; its findings will be discussed in the Executive Board.

The study is a natural extension of the analysis already done by the High Intensity Proton (HIP) Working Group which focused on intensity upgrade (CERN-AB-2004-022 OP/RF). Its scope is widened to cover other parameters such as beam energy and the needs of all possible users of CERN facilities. It is expected to make use of the EU supported initiatives, namely the Networks HHH and BENE, the Joint Research Activity HIPPI and the Design Studies EURISOL and DIRAC (FAIR project).

The working group will:

- **Collect performance requests of the future users**, taking into account the foreseen LHC upgrade, the possible Fixed Target Physics programme (including future options for neutrino physics) as recently discussed by the SPSC (Villars workshop) in the report CERN SPSC -2005-010 and the Nuclear Physics programme which will be discussed by the INTC (outcome of the future workshop in September 2005).
- **Analyse the various development and upgrade options** of the overall CERN proton complex including possible replacement of some of the present accelerators with Rapid Cycling Synchrotrons (RCS) and/or Fixed Field Alternating Gradient (FFAG) accelerators.
- **Identify technical bottlenecks and identify R&D** that would be required to validate the various options if necessary.
- **Identify synergies** of R&D with non-CERN studies and projects.
- **Report to the DG** results from the above studies before the end of 2005. Subsequent discussions in the Executive Board should be helpful to define a priority orientation.
- **Define a preferred scenario** together with a suggested implementation schedule, staged in time, and provide a preliminary estimate of the necessary resources (budget, man-power and expertise). A first presentation is expected by mid 2006 as an input for the critical decisions by the management in 2006 on a possible LINAC4. The preferred scenario will initially be rather tentative and will ultimately be formulated, around 2010, using the findings of this working group and taking into account the global status of high-energy physics plans and projects.