Physics Prospects with High Intensity Proton Accelerator at Tokai

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From Fiscal Year 2001 a new accelerator project to provide high-intensity proton beams proceeded into its construction phase in Japan. This project is a product of the joint effort between two institutions, JAERI (= Japan Atomic Energy Research Institute) and KEK (= High Energy Accelerator Research Organization). The accelerator complex will be constructed in Tokai which is one of JAERI's sites.

The project has the following components: a) 400 MeV proton linac (normal conducting) to inject beams to 3 GeV PS, b) a superconducting linac to accelerate protons from 400 MeV to 600 MeV (the 600 MeV proton beams will be used for R&D toward accelerator-driven nuclear transmutation), c) 25 MHz 3 GeV proton synchrotron with 1 MW power (this will be used primarily for materials and life sciences with neutrons and muons), and d) 50 GeV proton synchrotron with slow extraction for kaon beams etc. and fast extraction for neutrino beams to SuperKamiokande. Thus, the usage of various secondary particle beams (neutrons, mesons, antiprotons, etc.) that are produced in proton-nucleus reactions, together with daughter particles of the secondary beams such as muons and neutrinos, is the prime purpose of the project.

At the present moment, the Phase 1 of the project, which amounts to 134 billion yen, is approved. The construction period is 6 years and, thus, we expect the first beam in the spring of 2007.

In my presentation I will describe a) the project itself, b) sciences to be pursued at this new accelerator complex and c) the present status and future scope of the project.

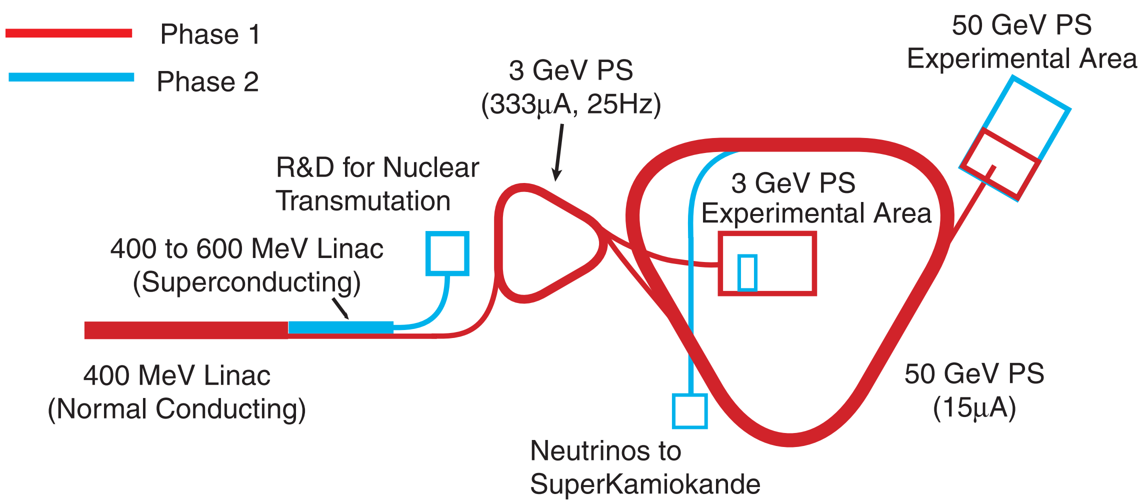

Figure 1: Layout of the JAERI/KEK Joint Project.