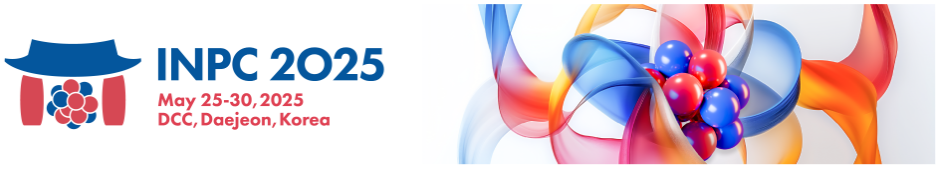

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Study of Heavy Ion Beam Acceleration at J-PARC

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This ABSTRACT is prepared for the J-PARC-HI collaboration.

For further development of physics research using high energy heavy ion beams (>10 GeV/u) in the Asia-Pacific region, we are planning to accelerate heavy ion beams at the J-PARC accelerator facility, which consists of a 400 MeV proton linear accelerator (LINAC), a 3 GeV Synchrotron (RCS), and a 30 GeV Main Synchrotron (MR), which can accelerate protons to 30 GeV. When heavy ions are accelerated to the same momentum as protons in this accelerator, even heavy ions such as lead and gold reach 11~12 GeV per nucleon, which is enough to cover the energy range where QGP is expressed.
Unfortunately, LINAC is dedicated to protons and cannot accelerate heavy ions. Therefore, we will prepare an injector dedicated to heavy ions that can accelerate heavy ions to a momentum equivalent to that of 400 MeV protons and inject heavy ions into the RCS.
We came up with the idea of reusing the 500 MeV booster synchrotron of KEK-12GeV-PS, which has already been shut down, to realize this heavy ion injector at a relatively low cost and in a short time. This small accelerator is stored in working condition at KEK Tsukuba, and in combination with an appropriate injector (e.g., a linear accelerator that can accelerate heavy ion beams up to several MeV/u), a heavy ion injector for the RCS can be configured.
In this presentation, the latest status of the heavy-ion acceleration plan, which can be realized at J-PARC as early as possible, will be introduced.

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