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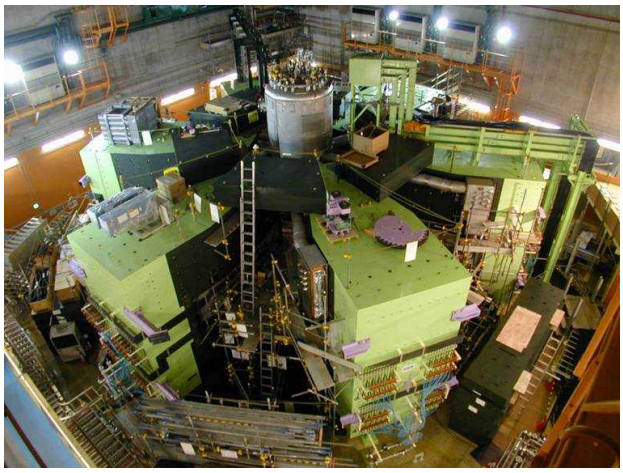
Atoms In Japan

5 August 2005

RIKEN Opens RIBF to Press

On August 5, the Institute of Physical and Chemical Research (RIKEN) led members of the press on a tour of its RI Beam Factory (RIBF) – currently under construction – which contains the world's first superconducting ring cyclotron (SRC).

Using an existing ring cyclotron as an injector, the RIBF accelerator facility will generate the world's highest energy levels, allowing the creation of radioisotope (RI) beams of all nuclides, up to uranium. Construction began in 1997, with the expectation that the first beams would be generated by December 2006 or so. At present, work on the assembly of the SRC – the core of the RIBF – is in the final stage. The SRC will soon be surrounded by pure iron shields to contain the magnetic flux, giving it the appearance of a lump of iron. Other beam-related facilities, including a fixed-frequency ring cyclotron (fRC) and an intermediate-stage ring cyclotron (IRC), are also being built. Meanwhile, RIKEN plans to construct test facilities inside the RIBF test building (completed this past May) during the five-year period of FY2006-2010 (i.e., April 1, 2006, to March 31, 2011).



SRC

A separate-sector SRC – weighing a total of 8,300 tons – creates strong magnetic fields using iron shields between separated magnets. The structure of RIKEN's SRC will enable the highest possible ion beam deflection capability. Currently, construction has progressed to the point where the device appears practically complete. Liquid helium is scheduled to be injected around the end of August.

The U-238 fission necessary to generate RI beams requires about 400 MeV of energy per nucleon, equivalent to about 70% of the velocity of light; however, the maximum acceleration obtainable so far is only 15% of the speed of light. The use of high-energy beams at RIBF is expected to enable uranium fission more efficiently, opening up a new world of the nucleus.

Under the RIBF program, RIKEN has three main aims: (1) helping build the ultimate model of the nucleus, (2) clarifying the origin of elements, and (3) spawning new industrial uses.

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