ACCELERATOR SEMINAR

The European Spallation Source and the Challenge of Designing Its Cryomodules

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European Spallation Source

The European Spallation Source (ESS) has the mandate to design, build and operate the world's most powerful neutron source. In 2010, the Accelerator Design Update Collaboration was formed to update the 2003 design, and to deliver a technical design report at the end of 2012. Detailed planning for the prepare-to-build prototyping project has begun, and potential future power upgrades are being considered. First protons are expected in 2018, and first neutrons in 2019.

The linac will deliver 5 MW of 2.5 GeV protons to a single target in 2.86 ms long pulses with a 14 Hz repetition rate. It will have a normal conducting front end with an ion source, a radio frequency quadrupole, and a drift tube linac. The superconducting part of the linac contains spoke cavities followed by two families of elliptical cavities.

One of the main challenges for the linac is the tight schedule for design, prototyping, testing, manufacturing and installation of the cryomodules. Another challenge is our ambition to be the world's first sustainable research lab, putting severe limits on energy consumption and therefore on the cryo system's heat load. A hybrid cryomodule concept is being developed in order to combine the low heat load on a continuous cryostat with the flexibility of a segmented design.

Thursday, October 6, 2011
11:00 a.m.
CEBAF Center, F113

Coffee before seminar at 10:45 a.m.

Jefferson Lab

For further info, please contact Alex Bogacz at x5784 or Anne-Marie Valente at x6073