

ACCELERATOR SEMINAR

“Beware the Lepton Sign Change: C.W. Positron Beam at JLab”

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There are more than hundred small-scale and a few number of large-scale positron facilities around the world. These facilities mainly use radioisotope sources, nuclear reactions and linacs to obtain positrons depending on the purpose and intensity requirements. At Jefferson Lab, there are two injectors (CEBAF and FEL injectors), which can provide 100% duty cycle, high quality and high energy electrons to create positrons via pair production. For the CEBAF injector, the energy will go up to 125 MeV when the 12 GeV upgrade is completed. The current FEL energy achievement is up to 135 MeV. In this talk, I will be presenting feasibility studies for a multi-purpose c.w. positron beam utilizing either of these injectors. The feasibility study includes optimization of the positron efficiency, and power deposition in the target and surrounding elements, capture and transfer optics. For the purpose of re-acceleration, 3 uA of positron current is achievable under certain boundary conditions by using CEBAF injector. For low energy applications 10^{13} e+/s can be obtained by using FEL electron beam.

Wednesday, August 24, 2011

10:00 a.m.

CEBAF Center, Room F113

Coffee before seminar at 9:45 a.m.