Joint DESY and University of Hamburg Accelerator Physics Seminar

Thursday, 27.03.2014

(16:00 in Room 459/30b)

Readiness for ERLs and Spin Off for Other Light Sources

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Abstract

Cornell has developed an Energy Recovery Linac (ERL) as an extension to the CESR ring to create a transversely coherent, continuous–duty hard x–ray source that would have spectral brightness orders of magnitude higher than existing storage ring sources. To do so requires making ultra–low–emittance electron bunches and accelerating and recovering their energy in a superconducting linear accelerator. Thus, three of the biggest challenges have been to prove feasibility of making an electron injector with (1) sufficient current, (2) sufficiently small emittances, and a superconducting linac with (3) sufficiently small energy consumption.

These milestores have now been met, including the production of a prototype SCRF cavity that has significantly exceeded design specification, the regular production of long–lived and low emittance cathodes, and the world–record of 75mA current from a photoemission DC gun in the prototype ERL injector.

The components that have been prototyped for the ERL, it's low–emittance gun, it's high–power and SCRF injector, it's high current cavity, and its CW cryomodule are now ready to be used by ERL projects, e.g. Mainz and ASML, and by other accelerators, e.g. SLAC's LCLS–II program with which Cornell is now collaborating.

NOTE THE UNUSUAL DATE

J.Roßbach (Univ. HH) and M.Vogt (MFL).

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