Joint DESY and University of Hamburg Accelerator Physics Seminar

Tuesday, October, 18-th, 2005

(16:00 in Room 459/30b)

Superconducting Photocathodes

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Abstract

Many emerging applications for electron accelerators, including energy–recovery linacs, and free electron lasers, require an injector capable of delivering a significant average current (greater than 1 mA), while still maintaining low emittance and good beam quality. RF photoinjectors are well known for their ability to produce short pulse duration, and high quality electron bunches with high charge per bunch. High duty–cycle (high current) operation presents a significant thermal management issue, however. For this reason, an RF photoinjector based on superconducting technology is an attractive option for meeting this injector requirement.

As with standard RF photoinjectors, the choice of a cathode material is of critical importance to a superconducting RF photoinjector injector. This talk will focus on cathode options for a SRF injector, with particular emphasis on the photoemission properties of superconducting lead and niobium.

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