Joint DESY and University of Hamburg Accelerator Physics Seminar

Tuesday, 07.09.2010

(16:00 in Room 459/30b)

Cold RF Electron Gun

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Abstract

Heating and thermal expansion in the normal conductivity RF electron gun are the main limitations to achieve high accelerating gradient and consequently a low emittance beam. By using properties of some pure materials in the range of temperatures of approximately 20 Kelvin we can expect a notable increase in the accelerating gradient, because of the very great significance of thermal conductivity and small coefficient of temperature expansion . To use materials like Molybdenum or Tungsten in the RF gun we should simplify the cavity shape, because machining of these materials is very hard. By reducing thermal losses it is possible to achieve gradient about 60 MV/m in the RF gun design which is similar to the DESY GUN5 design with only about six times less RF power

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

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