Joint DESY and University of Hamburg Accelerator Physics Seminar

Friday, 27.09.2013

(10:00 in Room 459/30b)

Design of the Extraction Arc for the 2nd Beam Line of the Free–Electron Laser FLASH
(PhD defense)

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DESY / Hamburg University

Abstract

In this talk, I will present the design of the extraction arc for the second beam line of the FEL (Free-Electron Laser) user facility FLASH at DESY Hamburg. Both beam lines share the same linear accelerator and the separation section is placed immediately downstream of the last accelerating module. I will present the constraints for the extraction arc determined by the beam line layout of the existing machine, by the building environment of the new beam line, and, most essential, by the effect of coherent synchrotron radiation (CSR) on the beam. The impact of CSR will be presented and I will show how to mitigate these effects and how that affects the beam line design. I will present the final layout of the extraction arc including the following matching section. This layout fulfills all given constraints and is capable of providing the required electron beam quality for FEL operation. In order to prove this, I will present start–to–end simulations for different bunch charges and for two different wave lengths.

NOTE THE UNUSUAL DATE AND TIME

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

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