MT25 Conference 2017 - Timetable, Abstracts, Orals and Posters



Contribution ID: 1038

Type: Poster Presentation of 1h45m

Fast dipole magnet development

Tuesday 29 August 2017 13:15 (1h 45m)

For the simultaneous operation of several parallel free electron laser beam lines and/or accelerator test experiments it is mandatory to have a device capable of fast switching of electron bunches between the different beam lines with high accuracy. Such devices are the described pulsed dipole magnets. Two magnets allow for an 8 degree kick to a 1.6 GeV electron bunch. Time of increase of a magnetic field is less than 100 μ s. Field delay from current is less than 2 μ s due to that the core of a magnet is assembled from a 80 μ m thick steel. Magnetic field integral B0 x L is 0.375 Tm. Magnets should operate at a frequency of 10 Hz. Particular attention is paid to minimizing the power dissipation due to Foucault currents. For this purpose, the magnetic field component perpendicular to the laminas has been minimized.

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Session Classification: Tue-Af-Po2.02

Track Classification: A2 - Resistive Accelerator Magnets