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The EPAC electron transport beamline - physics considerations and design

Tuesday, 9 May 2023 16:30 (2 hours)

The Extreme Photonics application Centre (EPAC) is a planned UK national facility. The current intention is for EPAC to use a 1 PW 10Hz laser system to drive laser plasma acceleration with output energies ranging from 100 MeV up to, at least, 5 GeV. The initial design for the electron beam transport of the EPAC facility is presented in this paper. This includes some initial considerations on which type of beam line could be used in order to accommodate as many of the different energies as possible. Subsequently, the 1 GeV option is examined in considerable detail. Field errors as well as misalignments for all magnets in the beam line are examined, both individually and together, as well as multipole errors. Finally, a complete layout of the beam line is produced, this includes all diagnostic locations together with the position of a tape system to remove the laser light post-acceleration.

Funding Agency

Footnotes

I have read and accept the Privacy Policy Statement

Yes

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