



Contribution ID: 1489 Contribution code: MOPL105

Type: **Poster Presentation**

Orbit correction studies for the MINERVA 100 MeV proton accelerator

Monday, 8 May 2023 16:30 (2 hours)

MINERVA entails the first phase of the MYRRHA programme, which aims at driving a nuclear reactor with a high-power proton accelerator, commonly referred to as an Accelerator Driven System(ADS). The purpose of MINERVA is to demonstrate the reliability requirements that are needed for a stable ADS, by the realization of a 100 MeV, 4mA proton beam.

In order to transport the proton beam with minimal losses, a strategic placement and usage of orbit correctors, i.e. steering magnets, and Beam Position Monitors (BPMs) along the accelerator is paramount. With this in mind, error studies were carried out with TraceWin to determine an optimal steering strategy and put forward requirements on magnet design and alignment. In addition, orbit correction studies were performed with an in-house developed beam dynamics simulation code, PyAccel. Comparison of the results obtained with both software packages serves as an important benchmark towards future developments.

Funding Agency

Footnotes

I have read and accept the Privacy Policy Statement

Yes

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Session Classification: Monday Poster Session

Track Classification: MC1: Colliders and other Particle Physics Accelerators: MC1.A08: Linear Accelerators