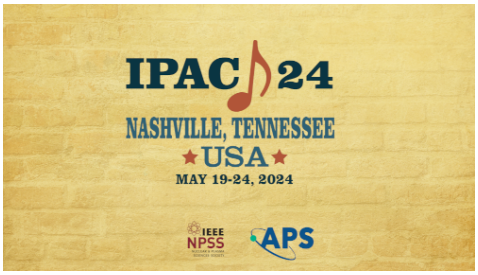

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Development of a fast pulsed magnet system for the MYRRHA collaboration

Tuesday, 21 May 2024 16:00 (2 hours)

In the framework of the MYRRHA collaboration, a large-scale Accelerator Driven System (ADS) being implemented by SCK CEN in Belgium, a fast pulsed magnet system is being designed and specified at CERN. A complete design study has been performed to develop the specifications and drawings for a kicker magnet, as well as the associated pulse generator to deflect the 100 MeV proton beam. This paper outlines the numerical simulations that have been set up to evaluate the performance of the kicker magnet featuring a 5 µs rise time with a variable flat top of 10 µs to 500 µs and a 250 Hz repetition rate. The design study concluded on a water-cooled lumped inductance magnet with two half coils each of 2 turns featuring a magnet aperture of 90 mm x 57 mm. The outside vacuum magnet design requires a coated ceramic vacuum chamber to pass the fast kicker field of 17.3 mT. The associated pulse generator has been designed to deliver pulses of 2 kV and 200 A matching the kicker rise time and is outlined together with the cable choice.

Footnotes

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