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Update on septum magnet redesign at LANSCE Proton Storage Ring

Thursday 14 August 2025 16:00 (2 hours)

We report the progress of redesigning the septum magnet at the LANSCE Proton Storage Ring (PSR). The septum magnet at the PSR is used for extracting the accumulated 800-MeV proton beams for transport to the target stations. The existing septum magnet uses parallel, planar coils creating a uniform deflecting magnetic field. However, one coil plate co-locates with the septum; this placement results in the coil, witnessing intense radiation dose rates, receiving accumulated damage to the epoxy potting during the PSR operation. The redesigned septum magnet uses a ferritic steel septum, and the coils are positioned farther away from the proton beam pipes. This placement, combined with the adoption of a more radiation-resistant potting epoxy, is expected to reduce the dose rate on the coil pack, correspondingly increasing the operating lifetimes. The magnet pole tips are refined with shim features to provide a wide flat-field region. The mechanical engineering of the yoke components and the supporting structures is underway. Particle tracking simulations of the proton beam deflection in the septum magnet were performed, and the comparison of performance between the existing and the redesigned septum magnets is reported.

Please consider my poster for contributed oral presentation

Yes

Would you like to submit this poster in student poster session on Sunday (August 10th)

No

Footnotes

Funding Agency

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Yes

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