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Design, manufacturing and validation of fast-ramping alpha magnet for interleaved operation at ANL APS

Wednesday 4 June 2025 16:00 (2 hours)

RadiaBeam has designed and manufactured a fast-ramping alpha magnet that is developed for interleaved operation at the Argonne APS. This interleaving operation requires the alpha magnet to stably complete a 5s long cycle with a 100ms ramp-up, 1000ms nominal field output and a 100ms ramp-down. A laminated yoke is used to minimize eddy currents, ensure fast field response times and reduce core-loss during operation. The magnet has been measured by Hall probe at Radiabeam and Argonne APS, demonstrating 2.75 T/m maximum field gradient alpha magnet within a 10cm x 14cm good field region in both DC and pulse mode.

Footnotes

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