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## **Strongly tapered helical undulator system for FAST-GREENS installation**

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

RadiaBeam, in collaboration with UCLA and Fermilab, is developing a strongly tapered helical undulator system for the Tapering Enhanced Stimulated Superradiant Amplification experiment at 515 nm (TESSA-515). The experiment will be carried out at the FAST facility at Fermilab as a Gamma-Ray high Efficiency ENhanced Source (FAST-GREENS). The undulator system was designed by UCLA, engineered by RadiaBeam, and will be installed on the beamline at Fermilab. The design is based on a permanent magnet Halbach scheme of four 1-meter long undulator sections; two of which have been completed and installed. The undulator period is fixed at 32 mm and the magnetic field amplitude can be tapered by tuning the gap along the interaction. Each magnet can be individually adjusted by 1 mm, offering up to 25% magnetic field tunability with a minimum gap of 5.58 mm. This paper discusses the design and engineering of the undulator system and the stage 0 installation status.

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### **Footnotes**

### **I have read and accept the Privacy Policy Statement**

Yes

**Primary author:** HODGETTS, Tara (RadiaBeam)

**Co-authors:** AGUSTSSON, Ronald (RadiaBeam); AMOUDRY, Loïc (Université Paris-Saclay, CNRS/IN2P3, IJCLab); BROEMMELSIEK, Daniel (Fermi National Accelerator Laboratory); DENHAM, Paul (Particle Beam Physics Lab (PBPL)); FISHER, Andrew (Particle Beam Physics Lab (PBPL)); LUMPKIN, Alex (Argonne National Laboratory); MACLEAN, Daniel (Fermi National Accelerator Laboratory); MUROKH, Alex (RadiaBeam Technologies); MUSUMECI, Pietro (University of California, Los Angeles); PARK, Youna (Particle Beam Physics Lab (PBPL)); RUELAS, Marcos (RadiaBeam); SANTUCCI, James (Fermi National Accelerator Laboratory); ZHOLENTS, Alexander (Argonne National Laboratory)

**Presenter:** HODGETTS, Tara (RadiaBeam)

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