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FFA magnet prototype for high intensity pulsed proton driver

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Fixed field Alternating gradient (FFA) accelerator is an option as a proton driver for the next generation spallation neutron source (ISIS-II). To demonstrate FFA suitability for high intensity operation, a 3 to 12 MeV proton prototype ring is planned at RAL, called FETS-FFA. The main magnets are a critical part of the machine, and several characteristics of these magnets require development. First the doublet spiral structure has never been designed before, and the essential feature of operational flexibility in terms of machine optics requires a wide range of changes for the field gradient. Finally, control of the fringe field is a challenge both mechanically and from the nonlinear optics point of view. This paper will discuss the design of the prototype magnet for FETS-FFA ring.

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Footnotes

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