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Overview of Kicker Magnets for FCC-ee and equivalent circuit modelling for the beam dump kicker magnet.

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This paper summarizes the first iteration of the FCC-ee kicker magnet design parameters. There will be 5 different kicker and septum systems in the FCC-ee complex. This work mainly focuses on the kicker magnet design for the beam dump system. A MATLAB script was created for automatized iteration on the design and optimization of the kicker magnet. The input parameters of this script are the required kicker magnet parameters, whilst the output parameters are the values of the equivalent electronic circuit and other parameters, such as the pulse current and voltage values. A simulation model was developed that approximates the parameters of the proposed kicker magnet as an equivalent circuit model. Results from the simulation of the equivalent circuit are presented. These are frequency simulation, transient simulation and electrical impedance simulation. In the next stages of development, the magnet model will be refined. A 3D simulation model of the electromagnetic field will be created and the principle will be applied to other FCC-ee kicker systems.

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