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High Resolution Beam Modeling and Optimization with IMPACT¹

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The LCLS-II, a new BES x-ray FEL facility at SLAC, is being designed using the IMPACT simulation code which includes a full model for the electron beam transport with 3-D space charge effects as well as IntraBeam Scattering and Coherent Synchrotron Radiation. A 22 parameter optimization is being used to find injector and linac configurations that achieve the design specifications. The detailed physics models in IMPACT are being benchmarked against experiments at LCLS.

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