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## Modeling and simulation of transverse wakefields in PWFA

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A simplified model describing the PWFA transverse instability in the form of a wake function parameterized only with an effective cavity aperture radius  $a$  is benchmarked against QuickPIC simulations. This wake function implies a  $1/a^4$  scaling of the transverse wakefields, which indicates transverse intra-beam wakefields typically several orders of magnitude higher than in conventional acceleration structures. The constraint on main beam charge and efficiency imposed by such transverse wakefields is addressed using a simplified theoretical model and numerical simulations, and a mitigation method inspired by BNS damping is also assessed.

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