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Mitigating cross-beam energy transfer with optical vortices[1] BLAINE ARMSTRONG, ROBERT FEDOSEJEVS, ANDREW LONGMAN, JASON MYATT, University of Alberta — Based on recent advances, the application of laser bandwidth at the 1% level is expected to greatly improve the prospects of direct-drive ignition on a MJ-scale facility.[2] While schemes to implement such bandwidth are being pursued, they will be both intrusive and expensive. As an alternate approach, simulation work is presented that explores the use of complex spatial (rather than temporal) laser beam conditioning on cross-beam energy transfer (CBET) with the aim of achieving similar mitigating effects. This beam conditioning might be generated by phase plates alone and therefore could be implemented on laser facilities lacking a broad bandwidth capability. Specifically, we have quantified the energy exchange occurring between crossing laser beams containing optical vortices [3] using the *LPSE* code. The mitigating effects are described in terms of the exchange of orbital angular momentum (OAM) between the coupled waves, and the degree to which a difference in OAM between crossing beams can frustrate the stimulated Brillouin scattering process responsible for CBET.

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[2]R.K. Follett *et al.*, Phys. Rev. Lett. **120**, 135005 (2018); J.W. Bates *et al.*, Phys. Rev. E **97**, 061202(R) (2018)
[3]M. Padgett *et al.*, Physics Today **57**, 35 (2004)

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