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Limits for light intensification by reflection from relativistic plasma mirrors¹ ANDREI SOLODOV, University of Rochester, VLADIMIR MALKIN, NATHANIEL FISCH, Princeton University — Two new schemes for light intensification towards the vacuum breakdown intensities (the Schwinger limit) have been proposed recently [S. V. Bulanov et al., Phys. Rev. Lett. 91, 085001 (2003) and S. Gordienko et al., Phys. Rev. Lett. 94, 103903 (2005)], which contemplate huge frequency upshifts of laser pulses by means of reflection from ultra-relativistic plasma mirrors. Were these scheme to work, they would provide remarkable reduction in size and costs of lasers capable of producing the vacuum breakdown intensities. We show that there are severe limitations for laser frequency upshifts, that may prevent these schemes from reaching the Schwinger limit.

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