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Parametric Instabilities in Structured Crossing Laser Beams[1]
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We examine the theory of parametric instabilities in structured laser beams. Spatial intensity variations of lasers (speckle patterns or filamented beams) can imprint their fluctuations onto the plasma which then can influence the propagation of other beams which have crossed it. This leads to a theory where one is able to calculate the effective growth rates of parametric instabilities in the presence of multiple crossing laser beams. The effect of plasma inhomogeneity and temporal variations of the laser field patterns due to induced spatial incoherence (ISI) or smoothing by spectral discretion (SSD) are also included. Examples will be drawn from both Direct and Indirect Drive laser fusion target physics.

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