

Abstract Submitted  
for the MAR15 Meeting of  
The American Physical Society

**Controlling modal interactions in lasers for frequency selection and power enhancement** LI GE, College of Staten Island/Graduate Center, CUNY — The laser is an out-of-equilibrium non-linear wave system where the interplay of the cavity geometry and non-linear wave interactions determines the self-organized oscillation frequencies and the associated spatial field patterns. Using the correspondence between nonlinear and linear systems, we propose a simple and systematic method to achieve selective excitation of lasing modes that would have been dwarfed by more dominant ones. The key idea is incorporating the control of modal interaction into the spatial pump profile. Our proposal is most valuable in the regime of spatially and spectrally overlapping modes, which can lead to a significant enhancement of laser power as well.

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Date submitted: 14 Nov 2014

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