Abstract Submitted
for the DPP11 Meeting of
The American Physical Society

Instability dynamics in photonic plasma[1] SETH DAVIDOVITS, LAURA WALLER, STEFAN MUENZEL, CAN SUN, Princeton, DMITRY V. DYLOV, General Electric, JASON W. FLEISCHER, Princeton — It is now well-established that the nonlinear propagation of spatially incoherent light can be treated as a photonic plasma, with optical speckles interacting via Langmuir-type modulation waves. Here, we examine basic instability dynamics for different spectral distributions. In particular, we experimentally observe modulation and bump-on-tail instabilities, in both the weak and strong turbulence regimes. We directly measure momentum and energy exchange/cascades across a range of coupling strengths, including the transition between turbulence regimes. Applications to both plasma and imaging systems will be discussed.

[1]This work was supported by DOE CSGF, DOE, NSF, AFOSR

Seth Davidovits
Princeton

Date submitted: 29 Jul 2011 Electronic form version 1.4