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pF3d simulations of nonlinear backward stimulated Raman scatter in a multi-speckle environment[1] E.S. DODD, B. BEZZERIDES, D.F. DUBOIS, H.X. VU, LANL — Kinetic simulations of backward stimulated Raman scattering (BSRS) have shown that, in regimes of strong Landau damping of the BSRS Langmuir wave (LW), the reflectivity can exceed that predicted by linear analysis [1]. This is a result of electron trapping in the LW, which decreases Landau damping, and creates a frequency shift. Above a threshold, determined by the competition of trapping and collisional diffusion, the frequency shift becomes the dominant saturation mechanism for BSRS. This includes the transverse modulational instability [2]. However, one must use a code that models the nonlinear microscopic behavior along with the macroscopic evolution of the laser beam and background plasma. Here, we discuss work on implementing an empirical model for this effect in the pF3d code [3]. The model has been tested by comparing pF3d single-hot-spot simulations against theoretical calculations of the inflation threshold. We will discuss our current effort, using pF3d, to understand how the onset of nonlinear LW behavior is affected by inter-speckle interactions. [1] H. X. Vu, et al., *Phys. Plasmas* 14 012702 (2007). [2] H. A. Rose, and L. Yin, *Phys. Plasmas* 15 042311 (2008). [3] R. L. Berger, et al., *Phys Plasmas* 5 4337 (1998).

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