Single speckle SRS threshold as determined by electron trapping, collisions and speckle duration HARVEY ROSE, Los Alamos National Laboratory, WILLIAM DAUGHTON, LIN YIN, LANL, BRUCE LANGDON, LLNL — Speckle SRS intensity threshold has been shown[1] to increase with spatial dimension, D, because both diffraction and trapped electron escape rate increase with D, though the net effect is to substantially decrease[2] the threshold compared to 1D linear gain calculations. On the other hand, the apparent threshold appears to decrease[3] with integration time in PIC simulations. We present an optimum[4,5], nonlinearly resonant[6] calculation of the SRS threshold, taking into account large fluctuations of the SRS seed reflectivity, R_0. Such fluctuations, absent in 1D, are caused by a gap in the linear reflectivity gain spectrum which leads to an exponential probability distribution for R_0. While the SRS threshold intensity is of course finite, these fluctuations lead to a decrease of apparent threshold with increasing speckle lifetime.

[1]L. Yin *et al.*, *Physics of Plasmas* **15**, 013109 (2008).
[2]D. S. Montgomery *et al.*, **9**, 2311(2002).
[3]Bruce Langdon *et al.*, 38th Anomalous Absorption Conference (2008).
[4]Harvey A. Rose, *Physics of Plasmas* **10**, 1468 (2003).
[5]Harvey A. Rose and L. Yin, *Physics of Plasmas* **15**, 042311 (2008).
[6]Harvey A. Rose and David A. Russell, *Phys. Plasma* **8**, 4784 (2001).

Harvey Rose
Los Alamos National Laboratory