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PIC simulations of stimulated Brillouin scattering driven by white light BRUNO BRANDAO, LUIS SILVA, GoLP/Instituto de Plasmas e Fusao Nuclear, Instituto Superior Tecnico, Lisboa, Portugal, ROBERT BINGHAM, Rutherford Appleton Laboratory, Didcot, U.K. — A generalized Wigner-Moyal statistical theory of radiation [1,2] is used to obtain a general dispersion relation for Stimulated Brillouin Scattering (SBS) driven by a spatially stationary radiation field with arbitrary statistics. Our results show that the growth rate of SBS can be reduced by 1/3 for a bandwidth of 0.3 nm, for typical NIF parameters. We also discuss and describe an implementation of the pump wave's bandwidth in the PIC code OSIRIS 2.0 and perform simulations of broadband effects in parametric instabilities, focusing on the dependence of the growth rate of SBS on the intensity and wave number of a broadband pump field. The evolution of the strength of the instability as a function of the bandwidth (σ) is also studied, retrieving the theoretically expected $1/\sigma$ dependence. [1] J. E. Santos and L. O. Silva, J. Math. Phys. **46**, 102901 (2005) [2] J. E. Santos, L. O. Silva, and R. Bingham, Phys. Rev. Lett. **98**, 235001 (2007)

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