1027-78-73   **Pavel M Lushnikov***, Department of Mathematics and Statistics, MSC03 2150, University of New Mexico, Albuquerque, NM 87131. *Collective stimulated Brillouin backscater.*

We develop the statistical theory of the stimulated Brillouin backscatter instability of a spatially and temporally partially incoherent laser beam in for laser fusion relevant plasma. We found a new regime of SBS which has a much larger threshold than classical threshold of coherent beam in the long-scale-length laser fusion plasma. Instability is collective because it does not depend on the dynamics of isolated hot spots of laser intensity, but rather depends on averaged beam intensity and bandwidth. We identified convective and absolute instability regimes. The threshold of convective instability is inside the typical parameter region of National Ignition Facility designs. Well above incoherent threshold the coherent instability growth rate is recovered. (Received February 14, 2007)