Abstract Submitted
for the DFD08 Meeting of
The American Physical Society

**Receptivity to molecular agitation in boundary-layer transition** PAOLO LUCHINI, Università di Salerno — Convectively unstable flows behave as amplifiers, and their laminar region can be extended by lowering the level of external disturbances. At first sight, complete laminarization appears possible in principle. However, it was sometimes pointed out in the past (e.g. Betchov 1961) that the velocity fluctuations associated with molecular agitation (those responsible of thermal noise and Brownian motion) in a fluid are 80 to 100 dB below the level of turbulent fluctuations, and thus of the order of magnitude required to provoke transition. Nevertheless, quantitative receptivity calculations have only ever been applied to external disturbances of acoustic or vortical origin or due to surface roughness, omitting thermal noise. Here the amplification of thermal noise by a boundary layer is explicitly computed, confirming that transition can be induced in this way. Therefore, even in a perfect environment with zero disturbances the extent of laminar flow is bounded. In addition, this computed upper bound is not far from practically observed transition lengths, implying that in some environments external disturbances may actually be negligible, and knowledge of their level unneeded to predict transition.

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Date submitted: 02 Aug 2008 Electronic form version 1.4