**The
parametric mechanism maintaining the roll/streak/turbulence complex
in boundary layers** BRIAN FARRELL, Harvard University — Stochastic Structural Stability Theory (SSST) provides an autonomous, deterministic, nonlinear dynamical system for evolving the statistical mean state of a turbulent system. In this presentation SSST is applied to the problem of understanding maintenance of the roll/streak/turbulence complex that supports boundary layer turbulence. In the presence of sufficiently high levels of free stream turbulence roll/streak structures bifurcate from the laminar flow as a linear instability of interaction between the free stream turbulence and the mean flow leading to an essentially time dependent state that is self-maintaining in the absence of external forcing by free stream turbulence. This chaotic state is supported by the universal instability inherent in time dependent non-normal system dynamics.

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