Abstract Submitted
for the DFD16 Meeting of
The American Physical Society

**Approximate Solutions to the Linearized Navier-Stokes Equations** ANTHONY LEONARD, California Institute of Technology — The linearized Navier-Stokes equations for incompressible channel flow are considered in which the flow is homogeneous in two directions. We study the initial-value problem for $v$ and $\omega_y$, where $y$ is the coordinate normal to the wall. After a Laplace transform in time and a double Fourier transform in space we use the WKB approximation on the resulting system of ODEs in $y$. For example, for the inviscid equations we can construct analytically the Greens function for such solutions in terms of the Bessel functions $J_{+1/3}, J_{-1/3}, J_1$, and $Y_1$ and their modified counterparts. In this approach the critical layer or the $y$ location where $U(y) = \omega/k_x$ requires special attention, as might be expected, as well as the location of the turning point where $d^2U/dy^2 = (k_x^2 + k_z^2)(\omega/k_x - U(y))$, if it exists.

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Date submitted: 01 Aug 2016 Electronic form version 1.4