

Abstract Submitted  
for the DFD06 Meeting of  
The American Physical Society

**Analysis of receptivity in wall-bounded shear flow by Schmidt decomposition of the resolvent** BEVERLEY MCKEON, California Institute of Technology, ATUL SHARMA, Imperial College London — The receptivity of linearized Poiseuille flow to physically realistic, temporally and spatially constant or periodic forcing is investigated using a Schmidt decomposition of the resolvent. The orthogonal modes rank the body forcings that yield the highest disturbance energy gain. The concepts arising have a close relationship to frequency domain transfer function analysis methods known in the control systems literature. It is proposed that the processes leading to dominant structures identified by this procedure will be present in turbulent flow, where the required forcing shapes are provided by a nonlinear feedback process.

Beverley McKeon  
California Institute of Technology

Date submitted: 04 Aug 2006

Electronic form version 1.4