

Abstract Submitted  
for the DFD13 Meeting of  
The American Physical Society

**Control of fully turbulent pipe flow** JAKOB KUEHNEN, BJOERN HOF, IST Austria — We present a novel, very simple passive control technique, where a local modification of the flow profile by means of a stationary obstacle leads to full relaminarisation downstream. Relaminarisation is achieved about 50 diameters downstream of the control point. Since, in a smooth straight pipe, the flow remains laminar from that position significant reduction in skin friction can be accomplished. High-speed stereoscopic particle image velocimetry (S-PIV) has been used to investigate and capture the development of the transitional flow downstream the obstacle. We will present S-PIV measurements as well as pressure drop measurements and videos of the development of the flow during relaminarisation. The guiding fundamental principle behind our approach to control the velocity profile will be explained and discussed.

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Date submitted: 02 Aug 2013

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