

Abstract Submitted  
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**Convective instability in pipe flow through a sudden expansion**

JAMES SEDDON, University of Manchester — Flow through a sudden expansion in a pipe has been the subject of a lot of recent scientific interest. The geometry occurs in many industrial processes, from heat exchangers to combustion chambers, and is closely related to the physiological problem of flow through a stenosis. The inlet flow from the upstream pipe is Poiseuille, which forms a central jet surrounded by a recirculating eddy in the expanded downstream pipe. Recently we showed that this kind of flow passes through a symmetry breaking bifurcation before the onset of both intermittent and fully periodic time-dependent effects. We have now investigated the intermittency in more detail and find that the flow becomes convectively unstable. A wave packet emerges from the laminar state and grows to a maximum size of several diameters before decaying.

James Seddon  
University of Manchester

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