

Abstract Submitted
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Turbulence in Reynolds' flashes¹ RORY CERBUS, CHIEN-CHIA LIU, GUSTAVO GIOIA, PINAKI CHAKRABORTY, Okinawa Institute of Science and Technology — Osborne Reynolds' seminal work from 1883 revealed that the transition from quiescent, laminar flow to a turbulent pipe filled with roiling eddies is mediated by localized flashes of fluctuations. Later work has unveiled many features of these flashes: they proliferate or fade away, maintain their shape or continually expand. The nature of the fluctuations in the flashes, however, has remained mysterious. Here, using measures traditionally attributed to high Reynolds number (Re) flows, we present experimental results on the fluctuations of the flashes. Our results suggest that the transition to turbulence is the low Re limit of the high Re, fully developed flow.

¹Okinawa Institute of Science and Technology

Pinaki Chakraborty
Okinawa Institute of Science and Technology

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