TURBULENT FLOWS AND INTERMITTENCY IN LABORATORY EXPERIMENTS

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In large Reynolds number turbulent flows, the transfer of energy from large to small scales is strongly intermittent, in contradiction with Kolmogorov's (1941) assumptions. The statistical properties associated with these energy transfer fluctuations at a given scale r have been widely studied theoretically, experimentally and numerically since the 60s.This paper will present a review of laboratory experiments which clearly display the fractal nature of the (space or time) energy distribution at scale r, these departures from the K41 predictions being generally quantified through high order moments of velocity increments.