

Abstract Submitted
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On-Off intermittency detected at the onset of turbulence in a magnetized plasma column THIERY PIERRE, CNRS Paris — The transition to turbulence is investigated in a rotating linear magnetized plasma column (MISTRAL device) and the role of the noise is emphasized. The destabilization is induced by injection of electrons on the axis of the device biasing the anode of the source plasma. Starting from a rotating plasma, that can be compared to a laminar regime in fluid dynamics, the slight increase of the potential of the source plasma leads to the onset of intermittent bursts in the edge corresponding to the expulsion of plasma blobs and to the transient destruction of the stable rotating plasma column. The statistical analysis of the time series of the density at the onset of the intermittency is performed. The distribution of the recurrence time of the turbulent bursts and the distribution of the duration of the laminar phases are analyzed. At the threshold, a power law is found for the distribution of the laminar duration with critical exponent $-3/2$. This dynamical behavior is similar to On-off intermittency (Platt, Spiegel, Tresser, PRL 70, 279,1993) induced by Gaussian noise superimposed on the control parameter. When the control parameter is increased, the distribution evolves towards an exponential decay law.

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