

P2.1089 Properties of density temperature and electric field structures in the turbulent regime of the simply magnetised toroidal plasma device THORELLO

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Experimental investigation of magnetised plasma turbulence is actively pursued in fusion aimed as well as in basic plasma physics toroidal devices. In particular the understanding of turbulent transport mechanisms has a great interest for the improvement of the magnetic confinement. Here we report the results of an experimental investigation of plasma parameters fluctuations of a turbulent, low beta, low temperature plasma with a simply magnetised torus configuration. Experiments have been performed in the Thorello device, operating at the University of Milano-Bicocca [1]. There a low temperature, high density plasma can be produced in a steady configuration for long times in a hydrogen low pressure discharge. Plasma parameters have been studied by means of multiple pin electrostatic probes and fairly long time series of fluctuations have been obtained and correlated. At the edge of magnetic confinement devices, a large fraction of anomalous particles and energy transport is attributed to the propagation of density blobs [2]. These are isolated and intermittent structures, with density and temperature above the surrounding plasma, extending along field lines and propagating away from the bulk. In this contribution we discuss some properties of plasma structures that develops and propagates in the edge region. In particular we assess the role of transport flux events, defined by the simultaneous enhancement of plasma density and radial ExB velocity. Effects of such events on plasma transport (particle flux) has been analyzed for different scenarios [3].

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