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Turbulent flow and energy transfer in the RFX-Mod device N. VIANELLO, E. SPADA, R. CAVAZZANA, E. MARTINES, G. SERIANNI, M. SPOLAORE, M. ZUIN, V. ANTONI, Consorzio RFX, Associazione Euratom-ENEA sulla Fusione, Padova, Italy — In the edge region of fusion devices $\mathbf{E} \times \mathbf{B}$ sheared flow and turbulence tend to organize themselves near marginal stability, and the role of fluctuations in driving sheared flow through Reynolds stress mechanism has been proved. This self-regulation process suggests the existence of an energy transfer between fluctuations and mean flow. A new set of insertable probes, installed in the RFX-mod Reversed Field Pinch device, allow the study of the quantity $P = \left[-\frac{\langle \tilde{b}_r \tilde{b}_\phi \rangle}{\overline{\rho}\mu_0} + \langle \tilde{v}_r \tilde{v}_\phi \rangle\right] \partial_r \overline{V}_\phi$, which provides the energy transferred between fluctuations and mean flow, and also the determination for the first time of the quantity $T = \frac{\langle \tilde{v} \times \tilde{j} \rangle}{\overline{\rho}} \cdot \overline{B}$, which represents the energy exchanged between electrostatic and magnetic fluctuations at small scales. Both the radial profiles and the temporal evolutions of these quantities have been measured supporting the existence of a continuous energy exchange between fluctuations and mean flow and among the fluctuations themselves.

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