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Improved core confinement in JET plasmas close to q=1 and possible alternative explanations FLAVIO CRISANTI, ENEA, JET EFDA CONTRIBUTORS* COLLABORATION — Associazione Euratom/ENEA sulla Fusione, Frascati, C.P. 65, 00044 Frascati, Italy In some experiments [e.g. 1,2] internal transport barriers are seen in situations where the usual theoretical pictures do not provide an obvious explanation, e.g. the hybrid regime, with q0 close to 1, or even in the presence of sawteeth. In some cases these events are transient, only affecting the ion channel. However, in some JET experiments enhanced temperature gradients have been observed on both electron and ions lasting about 5s (over 20 energy confinement times and about 1 resistive time). Up to 25% of the ion population were fast particles, providing up to 40% of the plasma stored energy. Similar discharges with higher density did not show the same behavior. The fast ion population, which is sensitive to the density, can stabilize ITG modes [2]. The JET experimental evidence will be analyzed within this theoretical frame and the results compared with other theoretical approaches.
*See the Appendix of M L Watkins *et al.*, Fusion Energy 2006 (Proc. 21^{st} Int. Conf. Chengdu, 2006) IAEA, (2006)

[1] F Crisanti *et al*, *ibid*
[2] G Tardini *et al.*, Nucl. Fusion **47** (2007) 280

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