

Reduction of asymmetric wall force in JET and ITER disruptions including runaway electrons

H. Strauss, E. Joffrin, V. Riccardo, J. Breslau, R. Paccagnella, G. Y. Fu, and JET Contributors

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Abstract:

It was shown that asymmetric vertical displacement event disruptions in JET and ITER do not produce a large asymmetric force on conducting structures surrounding the plasma, provided that the current quench (CQ) time is less than the resistive wall penetration time. This is verified with JET data. In ITER, the CQ is expected to be comparable to the resistive wall penetration time, which gives a small wall force. It is shown that runaway electrons (REs) in JET do not produce a large wall force, and this is verified with JET data. This occurs if the RE current is about half of the initial plasma current. In ITER, the RE current might be comparable to the initial current, and REs might lengthen the CQ time sufficiently to produce a large wall force.