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Recent progress in understanding runaway generation trends during disruptions in JET VLADISLAV PLYUSNIN, Association Euratom/IST, Centro de Fuso Nuclear, Lisbon, Portugal, JAN MLYNAR, Association Euratom - IPP.CR, Prague, Czech Republic, BARRY ALPER, Euratom Association /UKAEA Fusion, Culham Science Centre, UK, JET-EFDA TEAM[1] — Runaway electrons (REs) generated during disruptions in large tokamaks can cause high heat loads, melting and sputtering of the materials used for plasma facing components and the vacuum chamber. A comprehensive understanding of the trends of runaway generation is needed to avoid possible detrimental consequences of REs in ITER. Analysis of recent experiments on disruption generated REs in JET [V.V. Plyusnin et al. Fusion Energy 2004, EX/P2-27] requires further advances in the modelling of the runaway process. This paper summarizes recent developments in understanding runaway generation trends achieved on the basis of numerical modelling. The model simulates RE generation from the very beginning of the current quench phase, focussing on the influence of the dynamics of the runaway current-carrying channel in time and space on the evolution of the RE parameters. The experimental trends and numerical simulations show that runaway electrons might be an issue for ITER and therefore it remains prudent to develop mitigation methods that suppress runaway generation.

[1]See appendix in J. Pamela et al., Fusion Energy 2004 (Proc. 20th Int. Conference, Vilamoura, 2004).

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