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Kinetic modelling of energy deposition and erosion of EAST divertor targets during ELMs[1] S. DAI, Dalian University of Technology, P.R.China, L. WANG, Institute of Plasma Physics, Chinese Academy of Sciences, P.R.China, D. TSKHAKAYA, Association EURATOM-AW, University of Innsbruck, Austria, A. KIRSCHNER, Association EURATOM-FZJ, Germany, J. SUN, D. WANG, Dalian University of Technology, P.R.China — Edge localized modes (ELMs) produce a periodic expulsion of plasma particles and energy from the edge region into the scrape-off layer (SOL) towards the divertor target and other plasma facing components (PFCs) in fusion devices. High energy particles due to ELMs burst lead to the excessive heat load on the divertor plate, which results in material erosion, melting and vaporization. This has a serious impact on the lifetime of PFCs and further the operation of fusion reactor. Therefore, the modelling and understanding of the effects of the ELMs on energy deposition and erosion of divertor target is one of the most crucial issues concerning the design and performance of PFCs. In this study, a one-dimension-in-space and three-dimension-in-velocity (1d3v) Particle-In-Cell Monte Carlo collision (PIC-MCC) code SDPIC (SOL & Divertor PIC simulation) has been developed to investigate energy deposition and erosion of divertor target of EAST. Time evolution of energy flux and erosion of the divertor target has been studied. The spatial distribution of potential and plasma density during ELMs burst has been investigated. In addition, heat conduction equation has been implemented into SDPIC to study variation of surface temperature during ELMs.

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