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**Time-dependent modeling of dust injection in semi-detached ITER divertor plasma**[1] ROMAN SMIRNOV, SERGEI KRASHENINNIKOV, University of California, San Diego — At present, it is generally understood that dust related issues will play important role in operation of the next step fusion devices, i.e. ITER, and in the development of future fusion reactors. Recent progress in research on dust in magnetic fusion devises has outlined several topics of particular concern: a) degradation of fusion plasma performance; b) impairment of in-vessel diagnostic instruments; and c) safety issues related to dust reactivity and tritium retention. In addition, observed dust events in fusion edge plasmas are highly irregular and require consideration of temporal evolution of both the dust and the fusion plasma. In order to address the dust-related fusion performance issues, we have coupled the dust transport code DUSTT and the edge plasma transport code UEDGE in time-dependent manner, allowing modeling of transient dust-induced phenomena in fusion edge plasmas. Using the coupled codes we simulate burst-like injection of tungsten dust into ITER divertor plasma in semi-detached regime, which is considered as preferable ITER divertor operational mode based on the plasma and heat load control restrictions. Analysis of transport of the dust and the dust-produced impurities, and of dynamics of the ITER divertor and edge plasma in response to the dust injection will be presented.

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