

Abstract Submitted  
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**Dynamic divertor by plasmoid ejection**<sup>1</sup> SHIZUO INOUE, YASUSHI ONO, YASUHIRO KAMINO, University of Tokyo, RITOKU HORIUCHI, National Institute for Fusion Science — We developed the new concept of divertor called the dynamic divertor which insulates the divertor plate from the main plasma using repetitive plasmoid ejection from the main plasma to the divertor coil. In this concept, current drive or heating causes the main plasma to expand and to form a plasmoid with helium ashes. Second, the expanding core plasma finally pinches off the small plasmoid and then, the plasmoid isolated from the main plasma is cooled down by argon gas puffing and finally is connected with the divertor plate. In this series of motions, divertor plate is not connected to the main plasma, indicating significant reduction of heat flux into the divertor plate. We demonstrated for the first time one cycle of the dynamic divertor action in TS-4 ST experiment. The plasmoid was formed at bad curvature at the main plasma and was translated to the divertor coil in agreement with the corresponding 2D MHD simulation results. The 2D MHD simulation also demonstrated the repetitive ejection of plasmoid from the main plasma by controlling the divertor coil currents. The remaining problem is to annihilate the common flux between the core plasma and the divertor coil and to demonstrate the repetitive plasmoid ejection simply by heating and current drive of the main plasma.

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