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Anomalous Edge Plasma Transport, Neutrals, and Divertor Plasma Detachment[1] YANZENG ZHANG, SERGEI KRASHENINNIKOV, REBECCA MASLINE, ROMAN SMIRNOV, University of California, San Diego — An impact of neutrals on anomalous edge plasma transport and zonal flow (ZF) is considered. As an example, it is assumed that edge plasma turbulence is driven by the resistive drift wave (RDW) instability. It is found that the actual effect of neutrals is not related to a suppression of the instability *per se*, but due to an impact on the ZF. Particularly, it is shown that, whereas the neutrals make very little impact on the linear growth rate of the RDW instability, they can largely reduce the zonal flow generation in the nonlinear stage, which results in an enhancement of the overall anomalous plasma transport. Even though only RDW instability is considered, it seems that such an impact of neutrals on anomalous edge plasma transport has a very generic feature. It is conceivable that such neutral induced enhancement of anomalous plasma transport is observed experimentally in a detached divertor regime, which is accompanied by a strong increase of neutral density.

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