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SOLPS simulations of X-divertor in NSTX-U[1] ZHONGPING CHEN, MIKE KOTSCHENREUTHER, SWADESH MAHAJAN, Univ of Texas, Austin — The X-divertor (XD) geometry in NSTX-U has demonstrated, in SOLPS simulations, a better performance than the standard divertor (SD) regarding detachment: achieving detachment with a lower upstream density and stabilizing the detachment front near the target. The benefits of such a localized front is that the power exhaust requirement can be satisfied without the radiation front encroaching on the core plasma. It is also found by our simulations that at similar states of detachment the XD outperforms the SD by reducing the heat fluxes to the target and maintaining higher upstream temperatures. These advantages are attributed to the unique geometric characteristics of XD - poloidal flaring near the target. The detailed physical mechanisms behind the better XD performance that is found in the simulations will be examined.

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