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DNS of a passive scalar in a turbulent channel with local forcing at walls. GUILLERMO ARAYA, Rensselaer Polytechnic Institute, Troy, NY, STEFANO LEONARDI, Dipartimento di Meccanica e Aeronautica, Universita di Roma "La Sapienza", Italia, LUCIANO CASTILLO, Rensselaer Polytechnic Institute, Troy, NY, PAOLO ORLANDI, Dipartimento di Meccanica e Aeronautica,Universita di Roma "La Sapienza", Italia — Direct Numerical Simulations (DNS) of the velocity and thermal fields in a fully developed turbulent channel, with normal periodic blowing/suction velocity disturbances at both walls, are presented. The governing equations have been discretized in an orthogonal coordinate system using a staggered central second-order finite-difference approximation. Results at low Reynolds number show a peak drag reduction of 60 percent and an average drag reduction of 46 percent with respect to the unperturbed channel when using a specific combination of amplitude/frequency in the local forcing system. Onward investigations consider the analysis of higher Reynolds numbers as well as influence of the local forcing on the heat transfer.

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