Heat transfer in a turbulent channel flow with a blowing/suction velocity boundary condition on the bottom wall STEFANO LEONARDI, Dipartimento di Meccanica e Aeronautica, University of Rome "La Sapienza," Rome, Italy, JUAN G. ARAYA, MICHAEL AMITAY, LUCIANO CASTILLO, Dept. of Mechanical, Aeronautical and Nuclear Eng.-Rensselaer Polytechnic Institute — Direct Numerical Simulations (DNS) of the velocity and thermal fields in a turbulent channel flow with a normal periodic blowing/suction velocity disturbance on the lower wall are presented for high and low Reynolds numbers. The purpose is to reproduce the complex physics of turbulent flows when synthetic jets (zero net mass flux) are placed on the bottom wall in order to enhance heat transfer. In the present paper, synthetic jets are modeled as a time dependant blowing/suction velocity boundary condition with a sinusoidal behavior and the influence of the perturbation frequency on friction and heat transfer coefficients is discussed.

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