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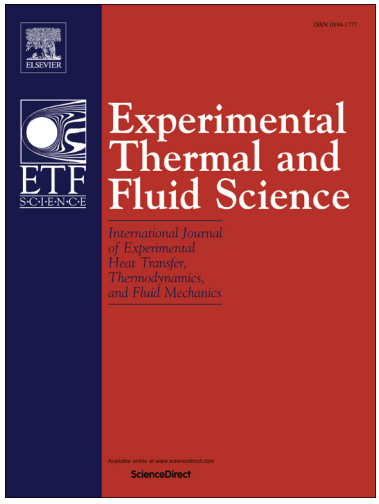

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Characterization of counter-rotating streamwise vortices in flat rectangular channel with one-sided wavy wall

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Abstract

Particle Image Velocimetry (PIV) has been used to characterize the evolution of counter-rotating streamwise vortices in a rectangular channel with one sided wavy surface. The vortices were created by a uniform set of saw-tooth carved over the leading edge of a flat plate at the entrance of a flat rectangular channel with one-sided wavy wall. PIV measurements were taken over the spanwise and streamwise planes at different locations and at Reynolds number of 2500. Two other Reynolds numbers of 2885 and 3333 have also been considered for quantification purpose. Pairs of counter-rotating streamwise vortices have been shown experimentally to be centered along the spanwise direction at the saw-tooth valley where the vorticity $\omega_z = 0$. It has also

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