Numerical simulation of turbulent flow in a rectangular channel with two fins

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Abstract

The focus of the present numerical study is on the flow through two parallel fins in a rectangular channel. The Unsteady Reynolds Navier-Stokes (URANS) 3-D numerical simulation is employed. In order to overcome the closure problem, the turbulence was modeled using the Reynolds Stress Model (RSM). The Computational Fluid Dynamics (CFD) results are validated using the experimental results available in the literature. The study aims to document the formation of quasi-periodic coherent structures and the important role that they play in transporting fluid across the inter-fin region.