# A MULTISCALE APPROACH FOR ENHANCED HEAT TRANSFER WITH PERIODIC GEOMETRIES

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**Abstract.** In many heat exchanger devices like radiators the main bootleneck in the heat transfer is the conduction of heat from the bulk of the channel flow to the walls. Passive devices like Vortex Generators (VGs) can be used to increase the heat transfer by promoting a secondary flow. In this work the heat transfer on periodic arrays of VGs is computed via an eigenvalue problem on the typical cell. In this way very precise computations of the effective heat transfer coefficient can be computed much more efficiently, enabling the optimization of the VGs. The technique can be applied also to periodic arrays of tubes or fins, or combinations of them.