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Traveling Waves in Natural-convection Flow Around an Array of Heated Cylinders HESSAM BABAEE, FANGFANG XIE, CHRYSSOSTOMOS CHRYSSOSTOMIDIS, Massachusetts Institute of Technology, GEORGE KARNIADAKIS, Brown University — In this numerical study traveling waves formed around an array of heated cylinders are investigated. The cylinders with a heat source are confined vertically. The natural convection flow around the cylinders leads to horizontal and axial traveling waves. In this study the physical mechanisms leading to the formation of the traveling wave are characterized. The effect of traveling wave on Nusselt number around the cylinder is also investigated. We use Dynamically Orthogonal (DO) decomposition with stochastic perturbations to capture the coherent structures in the flow.

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