

Abstract Submitted
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Unstable phenomena of low speed compressible natural convection with open boundaries by multi-GPU implementation. WEI-HSIANG WANG, RIKEN Adv Inst for Computational Science, WU-SHUNG FU, Nation Chiao Tung University, Taiwan, MAKOTO TSUBOKURA, Kobe University, Japan — Unstable phenomena of low speed compressible natural convection are investigated numerically. Geometry contains parallel square plates or single heated plate with open boundaries is taken into consideration. Numerical methods of the Roe scheme, preconditioning and dual time stepping matching the DP-LUR method are used for low speed compressible flow. The absorbing boundary condition and modified LODI method is adopted to solve open boundary problems. High performance parallel computation is achieved by multi-GPU implementation with CUDA platform. The effects of natural convection by isothermal plates facing upwards in air is then carried out by the methods mentioned above Unstable behaviors appeared upon certain Rayleigh number with characteristic length respect to the width of plates or height between plates.

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