DRBEM Solution of Nanofluids under DDMC in a Lid Driven Cavity

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Abstract

In this study the advantages of nanofluids on double diffusive mixed convection (DDMC) in a lid-driven cavity is analyzed by solving the velocity-vorticity form of the governing equations along with the energy and concentration equations. Numerical computations are conducted using the dual reciprocity boundary element method (DRBEM). Vorticity transport, energy and concentration equations are transformed to the form of modified Helmholtz equations by discretizing the time derivative terms first. The effects of Reynolds number (Re), Richardson numbers (Ri) and buoyancy ratio (N) for variation in volume fraction from 0 to 0.05 is presented for copper based nanofluid graphically and obtained results are good agreement with the results in [1].

References

[1] N. Reddy and K. Murugesan, Numerical investigation on the advantages of nanofluids under DDMC in a lid-driven cavity, *Heat Transfer-Asian Research*, **46** (2017) 1065-1086.

[2] N. Alsoy-Akgün and M. Tezer-Sezgin, DRBEM Solution of the Thermo-Solutal Buoyancy Induced Mixed Convection Flow Problems, *Engineering Analysis with Boundary Elements*, **37**, (2013), 513-526.

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