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Numerical Investigation of Mixed Convection of Cu/Al2O3—Sodium CMC Nanofluids Past a Circular Cylinder

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Abstract:
Using several types of nanofluids, such as aluminium oxide (Al2O3) and copper, this study proposes to explore the heat and mass transfer phenomena through a cylinder. To demonstrate the flow, the viscoelastic nanofluid model is combined with the energy equation. The modified main equations with specific conditions were used in this work, and model of Tiwari and Das was used. The acquired findings are numerically computed using the Keller-box approach and graphically shown to investigate the physics of relevant flow parameters. In comparison to aluminium oxide, the highest nanofluid performance was reported at copper, which significantly improved thermal conductivity and heat transfer.