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J.C. Umavathi, M.A. Sheremet, Odelu Ojjela, G. Janardhan Reddy

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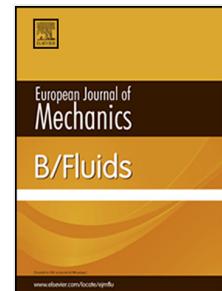
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The onset of double-diffusive convection in a nanofluid**saturated porous layer: Cross-diffusion effects**

J.C. Umavathi¹, M.A. Sheremet^{2,3*}, Odelu Ojjela⁴ and G. Janardhan Reddy⁵

¹Department of Engineering, University of Sannio, Piazza Roma 21, 82100 Benevento, Italy.

²Department of Theoretical Mechanics, Tomsk State University, 634050 Tomsk, Russia

³Department of Nuclear and Thermal Power Plants, Tomsk Polytechnic University, 634050 Tomsk, Russia

⁴Department of Applied Mathematics, Defence Institute of Advanced Technology (Deemed University), Pune - 411025, India.

⁵Department of Mathematics, Central University of Karnataka, Kalaburagi – 585 367, Karnataka, India.

ABSTRACT

The onset of double-diffusive convection in a horizontal porous layer saturated with a nanofluid with the Soret and Dufour effects is studied using both linear and nonlinear stability analyses in a three-dimensional way. The model used for the nanofluid incorporates the effects of Brownian motion and thermophoresis, and the modified Darcy model is used for the porous medium that includes the time derivative term to describe the momentum transport. The thermal energy equation includes the diffusion and cross-diffusion terms. The linear theory depends on the normal mode technique, and the nonlinear analysis depends on the minimal representation of double Fourier series. The

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