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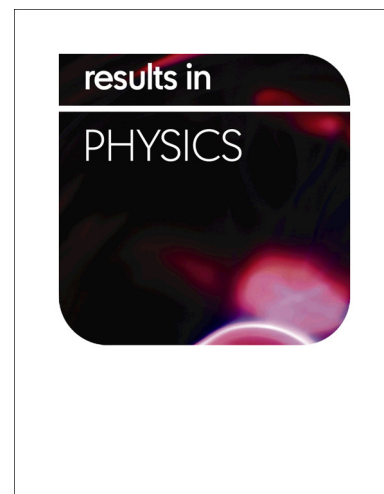
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Thermal Marangoni convection in two-phase flow of Dusty Casson fluid

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Abstract: This paper deals with the thermal Marangoni convection effects in magneto-Casson liquid flow through suspension of dust particles. The transpiration cooling aspect is accounted. The surface tension is assumed to be fluctuating linearly with temperature. The fluid and dust particle's temperature of the interface is chosen as a quadratic function of interface arc length. The governing problem is modelled by conservation laws of mass, momentum and energy for fluid and dust particle phase. Stretching transformation technique is utilized to form ordinary differential equations from the partial differential equations. Later, the numerical solutions based on Runge-Kutta-Fehlberg method are established. The momentum and heat transport distributions are focused on the outcome of distinct governing parameters. The results of Nusselt number is also presented and discussed. It is established that the heat transfer rate is higher in the case of dusty non-Newtonian fluid than dusty Newtonian fluid. The rate of heat transfer can be enhanced by suspending dust particles in a base liquid.

Keywords: Marangoni convection; Dusty fluid; Casson fluid; Two-phase flow; Runge-Kutta-Fehlberg method.

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