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EFFECT OF MAGNETIC FIELD ON THERMOSOLUTAL CONVECTION IN A ROTATING NON-NEWTONIAN NANOFLUID WITH POROUS MEDIUM

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ABSTRACT

The current study examines the influence of rotation and magnetic field on Rivlin-Ericksen nanofluid permeated with a porous media, which is heated from below. This nanofluid model takes into account thermophoresis and Brownian motion phenomena. The momentum-balance equation is stimulated under the influence of nanoparticles, viscoelasticity, rotation and magnetic field. Linear stability theory is used to identify the prerequisite for the onset of convection. The effect of thermo-nanofluid Lewis number, Taylor number, modified diffusivity ratio, medium porosity, nanoparticle Rayleigh number, solutal Rayleigh number, thermo-solutal Lewis number, Soret and Dufour parameters have been examined analytically and graphically. It is observed that the thermal nanofluid Lewis number, Dufour parameter, Chandrasekhar number, Taylor number, modified diffusivity ratio, solutal Rayleigh number, medium porosity, thermo-solutal Lewis number and Soret parameter have a strengthening influence on steady-state convection whereas nanoparticles Rayleigh number have let down influence on steady-state convection.

***KEYWORDS**: Nanofluid, Porous Medium, Thermosolutal Convection, Magnetic Field, Rotation*

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