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Flow of nanofluid containing gyrotactic microorganisms over static wedge in darcy-brinkman porous medium with convective boundary condition
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Abstract
The influence of bioconvection flow of a nanofluid containing gyrotactic microorganisms over a convectively-heated wedge in a Darcy-Brinkman porous medium is analyzed numerically. The highly nonlinear governing equations using similarity transformations are developed and then computed numerically via the Keller box method. The influences of emerging parameters on fluid velocity, temperature distribution, concentration of nanoparticles, and microorganism density are presented via graphs and tables. The behavior of fluid flow is also investigated through the coefficient of skin friction, Nusselt, Sherwood numbers, and microorganism density. Results reveal that the porosity parameter reduces the boundary layers thicknesses, while the modified porosity parameter enhances the boundary layers thicknesses. With the rise of thermophoresis parameter, the thermal as well as concentration boundary layers are appreciably modulated. Motile organisms decrease with rise of Péclet number and fluid number. Finally, a comparative analysis is made through previous studies in limiting cases and shown good correlation. © 2018 by Begell House, Inc. www.begellhouse.com

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