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Natural bioconvection flow of a nanofluid containing gyrotactic microorganisms about a truncated cone
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Abstract
A mathematical model is presented to investigate the natural convection boundary-layer flow of a water-based nanofluid containing gyrotactic microorganisms over a truncated cone with convective boundary condition at the surface. The governing partial differential equations are converted into ordinary differential equations by using suitable transformations. These equations are solved numerically using RKF7 with shooting method. Several comparisons with previously published works are reported and the results are found to be in excellent agreement. The numerical results are obtained and discussed for nanoparticle concentration, density of motile microorganisms profiles as well as the local skin-friction coefficient local Nusselt number, the local Sherwood number, the local density number of the motile microorganisms. It is found that density number of motile microorganisms, Sherwood number, Nusselt number and skin friction increase along the surface. © 2019 Elsevier Masson SAS

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