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| Title | **Lie Symmetries Analysis of Bio-Nano-Slip Flow in a Conical Gap Between a Rotating Disk and Cone with Stefan Blowing** | | |
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| Abstract |  |

The cone-disk system (CDS) involves a cone which contacts a disk at its tip. This type of flow problem is used in some devices in medical sciences, such as viscosimeters, conical diffusers, etc. The 3-D flow of a bio-nanofluid within the gap of a CDS is examined for the 4 selected arrangements: (i) rotating cone with stationary disk, (ii) rotating disk with stationary cone, (iii) co-rotation of cone and disk, and (iv) counter-rotation of cone and disk. Well, known Buongiorno's nanofluid model is applied to illustrate the flow behavior with Stefan blowing. The governing system constitutes the continuity, momentum, energy, the conservation of nanoparticle volume fraction (NVF) equation, and density of motile microorganisms’ (DMM) equations. The Lie group approach is used to obtain invariant transformations. Numerical simulations are done for various rotational Reynolds number and various gap angles to explore flow, heat, NPVF, and DMM transport features. The radial and tangential skin friction factors, Nusselt, Sherwood, and density numbers are calculated and inspected through tabular and graphical results. The slip and blowing parameters are demonstrated to affect the fluid friction, heat, NPVF, and DMM transfer rates from the disk and cone for the selected models.