

Effect of Soret Number on Axis Symmetric Flow Using Successive Linearization Method

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Abstract

In this research, the radially increasing axisymmetric discharge of an electrically conducting fluid across a surface is accurately evaluated mathematically using the influence of Soret number. The surface is extended at an exponential speed in a radial direction, which causes flow trends. New similarity transformations are discussed in order to transform the governing, transform nonlinear partial differential equations into standard derivatives. The Successive Linearization Method is used to perform mathematical analysis for flow performing. The Chebyshev spectral technique is utilized to resolve the linear system in order to provide accurate solutions that converge effectively to the whole numerical solution. Comparisons with earlier research are conducted to evaluate the validity of the results on the distribution of velocity, temperature and concentration. Verify convergence and accuracy of the solution, the impacts of a few fluid factors are identified and explained.

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