

Stagnation Flow of a Jeffrey Fluid over a Shrinking Sheet

Sohail Nadeem, Anwar Hussain, and Majid Khan

Department of Mathematics, Quaid-i-Azam University, 45320, Islamabad, Pakistan

Reprint requests to S. N.; E-mail: snqau@hotmail.com

Z. Naturforsch. **65a**, 540 – 548 (2010); received January 22, 2009

The present paper describes the analytical solutions for the steady boundary layer flow of a Jeffrey fluid over a shrinking sheet. The governing equations of motions are reduced into a set of nonlinear ordinary differential equations by using similarity transformations. Two types of problems, namely, (1) two-dimensional stagnation flow towards a shrinking sheet and (2) axisymmetric stagnation flow towards an axisymmetric shrinking sheet, have been discussed. The series solutions of the problems are obtained by using the homotopy analysis method (HAM). The convergence of the obtained series solutions are analyzed and discussed in detail through graphs for various parameters of interest.

Key words: Stagnation Flow; Jeffrey Fluid; Shrinking Sheet; Series Solutions.