

1067-76-2045

**Antonio Mastroberardino\*** (axm62@psu.edu), 4205 College Drive, Erie, PA 16563. *Annular stagnation flow on a moving cylinder.*

In various industrial applications, fluid is injected from a fixed outer cylindrical casing onto an inner moving cylindrical rod. This scenario is particularly important in pressure-lubricated bearings. Using a similarity transformation, the Navier-Stokes equations that govern this type of flow reduce to a 4th order nonlinear boundary value problem. In this presentation, I will provide analytical solutions to this ordinary differential equation using the homotopy analysis method and compare these results with numerical solutions. (Received September 22, 2010)