Analele **Univ**ersităţii **Bucureşti**, **Mat**ematică
Anul LV(2006) pp. 55–64

Dedicated to Professor LAZĂR DRAGOŞ on his 75^{th} birthday

A numerical study of laminar flow past two circular cylinders in-line at low Reynolds numbers

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December 20, 2005

Abstract - This work presents a computational study of the steady, axisymmetric, viscous flow around two circular cylinders in tandem. The vorticity – stream function formulation of the Navier – Stokes equations was chosen. Numerical solutions have been obtained in bipolar cylindrical coordinates. The finite difference method was used to discretize the model equations. A nested defect correction algorithm was employed to solve the discrete equations. Different cylinders spacing and sizes were considered for the upstream cylinder Reynolds number equal to 2. Vorticity and pressure distributions on the cylinders surfaces and drag coefficients are presented and compared with those calculated for an isolated cylinder.

Key words and phrases : laminar flow, two circular cylinders, bipolar coordinates, multigrid, defect correction.

Mathematics Subject Classification (2000) **:** 76M20, 76D17