Abstract Submitted
for the DFD13 Meeting of
The American Physical Society

Turbulence in Taylor-Couette Flow and a Molecule Dependent Transport Equation LUIS MA. BO-OT, National Institute of Physics, Univ of the Philippines Diliman QC Philippines, LUDEK JIRKOVSKY, Department of Informatics and Geo-informatics, Fakulta Zivotniho Prostredi, University of J.E. Purkyne, Usti n. L., Czech Republic — We apply a previously derived and utilized a modified Navier-Stokes equation to Taylor-Couette flow, that is fluid flow enclosed between two concentric cylinders where the inner cylinder is rotating with some constant speed and the outer cylinder is stationary or vice versa. We report first analytic solutions describing velocity profiles of such flow in turbulent regime. The analytic profiles are compared with results of the reported first direct numerical simulation of Taylor-Couette flow in turbulent regime [D. Pirro and M. Quadricio, Euro. J. of Mech. B, 27, (2008) 552-566]. PACS: 47.20.Qr, 47.27.-I, 02.30.Gp

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Date submitted: 05 Jul 2013 Electronic form version 1.4