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Stirring a slightly magnetized column of plasma VICTOR DÉSANGLES, GUILLAUME BOUSSELIN, ALEXANDRE POYÉ, MARC MOULIN, Univ Lyon, Ens de Lyon, Univ Claude Bernard, CNRS, Laboratoire de Physique, F-69342 Lyon, France, LUDOVIC DE POUCQUES, Université de Lorraine, Institut Jean Lamour UMR 7198, Vandoeuvre-ls-Nancy, F-54506, France, NICOLAS PLIHON, Univ Lyon, Ens de Lyon, Univ Claude Bernard, CNRS, Laboratoire de Physique, F-69342 Lyon, France, PHYSIQUE STATISTIQUE, HYDRODYNAMIQUE, NON-LINÉARITÉS TEAM, DÉPARTEMENT CHIMIE ET PHYSIQUE DES SOLIDES ET DES SURFACES TEAM — The von-Kàrmàn plasma experiment (VKP) is a cylindrical, low pressure, high density plasma experiment which confines the plasma thanks to an axial magnetic field. Currents are radially driven between a hot emissive cathode and an anode which apply a Lorentz force on the plasma together with the magnetic field. We demonstrate that current driven radially sets the plasma into rotation. LIF technique at 668.43 nm as well as Mach probes measurements have been developed and used in different regimes in order to measure the velocity of plasma and relate it to the current driven between the electrodes. The LIF signal shows an important widening which corresponds to doppler shift effect due to the velocity of the ions. This widening can be related to the Mach probes signals. In the long term views, each end of the plasma column will be rotating in an opposite direction, such as to create a large shear-layer, resulting in a von-Kàrmàn-type flow.

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