

Abstract Submitted
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Experiments on the flow around yawed and fixed cylinder: Forces and Flow measurements¹ GUILHERME R. FRANZINI, RAFAEL S. GIORIA, IVAN KORKISCHKO, JULIO R. MENEHINI, ANDRE L.C. FUJARRA, University of São Paulo — Flow around yawed and fixed circular cylinders were experimentally investigated at a Recirculating Water Channel facility. The total hydrodynamic loads were measured by using a 6DOF load cell and flow measurements were carried out using the 2D PIV technique. The cylinders were yawed in angles up to 45 degrees for both upstream and downstream orientations. For all the experiments, the aspect ratio is close to 13 and the lower end of the model is kept close to the channel floor. For the force measurements, the Reynolds number considering only the component normal to the cylinder axis lies in the interval $4000 < Re_n < 14000$. The PIV measurements were carried out at Re_n to 9000. Differences were observed in the force coefficients plots depending on the orientation. Low frequencies component $fD/U_n < 0.08$ were observed in lift force spectra in the case of upstream orientation. The Koopman decomposition applied to the PIV snapshots helped to a better understanding of the results.

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