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## Experimental study of the flow around a rotating cylinder in crossflow

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**Abstract:** This paper presents the results for an experimental investigation of the flow pattern around a rotating cylinder placed in a crossflow air stream. The velocity profiles upstream and downstream of the cylinder, skin friction coefficient, stagnation, and separation points are obtained for different rotation speed ratios ( $\Omega = \Omega R/V$ ) varying from 0.0 to 1.25. Compared to the non-rotating cylinder in crossflow, it was found that the position of the stagnation point for the rotating cylinder is a strong function of the rotational speed; however, the separation points are only slightly dependent on such speed. This investigation indicates also that the skin friction dominates on the upstream moving wall of the cylinder. Concerning the flow behind the rotating cylinder the measurements indicate that the wake behind the cylinder is asymmetric; for example, it is shifted in the direction of rotation and its axial length and width becomes smaller for the considered rotation speed ratios. For the flow ahead a slight effect of rotation is noticed. Some of the results obtained here are compared with a simple theoretical model [1] and the comparison shows fair agreement.