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Title of presentation:

Wake behind the rotating 3d bodies for moderate Reynolds number

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Abstract:

An experimental investigation of the flow behind a rotating sphere, a disk and a rotor was performed. The experiments were carried out in a low velocity water channel. Typical values of the Reynolds number are in the range from 100 to 400. The rotation rate Ω , defined as a ratio of maximum azimuthal velocity of the body and the free stream velocity, changes from 0 to 2. The methods used to investigate the flow were fluoresceine visualisations and PIV measurements. The analysis of the structures observed in the flow behind the rotating body for both steady and unsteady regimes was performed. We describe different modes of instability using various methods of modal decomposition as well as compare the behaviour of the different shapes. Additionally, we suggest the scope of further research.