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Influence of sand particle on the wake of circular cylinder[1] GUOHUA WANG, Lanzhou University, DEPARTMENT OF MECHANICS, LANZHOU UNIVERSITY TEAM — We conducted two-phase flow around a circular cylinder experiment in wind tunnel and measured air and sand particle velocities synchronously in the sand-laden flow by Particle Image Velocimetry (PIV) technique. The influence of moving sand particle (with an average diameter of ˜159um) on the wake of the circular cylinder was investigated. The results show that the wake of the circular cylinder inclines downward in the sand-laden flow, and the inclination angle increases with the increase of sand concentration. Under the influence of sand particles, the defect of mean streamwise velocity in the wake decreases with the increase of particle volume fraction. The settling particles cause the air in the wake flow downwards where the mean vertical velocity is no longer equal to 0. The streamwise and vertical turbulence intensities in the wake are weakened, in which the streamwise turbulence intensity in the wake gradually changes from a bimodal to an unimodal distribution with the increase of particle volume fraction.

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