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## Active control of vortex shedding from a circular cylinder at Reynolds number 170

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In this paper, some preliminary results reported from experimental observations of two-dimensional air flows with a Reynolds number of 170 passing a stationary circular cylinder and its active control achieved in the near wake will be provided. During the experiments the free stream velocity of the wind tunnel is maintained uniformly at  $U_{\infty}=80.4$  cm/sec. The feedback hot-wire sensor was located in the upper shear layer of the cylinder at about  $0.9d$  streamwise and about  $0.8d$  above the cylinder axis. Following, the phase of the feedback signal shifted  $180^{\circ}\pm 2^{\circ}$ , and the amplifier gain was adjusted, the perturbations were imposed via actuators on the wake of the cylinder on both sides of the wind tunnel at the vortex-shedding frequency to observe active control of vortex shedding and wake dynamics behind the cylinder. Thereafter, we measured natural and active controlled the amplitudes of turbulent velocity fluctuations vertically above the cylinder centerline with a hot-wire probe positioned at a streamwise station of  $x/d=2$  (near wake) at the center under natural and control conditions of the transitional flow in the wake of the cylinder. In this experiment, we have been able to demonstrate the cancellation of instabilities in the boundary layers and near the wake to achieve the active control of vortex shedding from the cylinder at the vortex shedding frequency. Thereby, we achieved the active control of the vortex shedding from a circular cylinder at Reynolds number 170

### Biography

Resat S Keles is an Adjunct Professor at the Fordham University. He is an expert in the area of the active control of turbulence and conducted research in the area at Yale University. He has published more than 15 papers in reputed journals, national and international conferences, and invited guest speaker at international conferences. He is listed mathematics and engineering educator by Marquis Who's Who. He currently teaches physics at Fordham University in the New York.

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