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Controlling the Flow around a Swept Back Circular Cylinder Using Periodic Excitation LUTZ TAUBERT, ISRAEL WYGNANSKI, University of Arizona — Periodic excitation emanating from one or two slots located on the surface of a circular cylinder was used to affect the forces acting on the cylinder and the flow around it, with particular attention being paid to the unsteady structures in the near wake. Experiments of this nature were carried out earlier on a cylinder whose axis was normal to the flow. Currently, research is being focused on a highly swept back cylinder (mostly at 60° sweep angle) that is bound between two parallel walls (infinitely yawed configuration) or has a finite aspect ratio. The sweep back enables the decoupling of the natural vortex shedding frequency from the excitation frequency, because the former decreases as a result of the sweepback while the optimum excitation does not change significantly. Three-dimensional PIV was used to map the flow field while surface and wake pressure measurements enabled the estimation of forces acting on the cylinder.

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