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# Flow Along a Long Thin Cylinder

**Owen. R. Tutty**[(1)], A.T. Parsons[(2)], W.G. Price[(1)]

(1) *University of Southampton, Southampton, UK*
(2) *QinetiQ, Winfrith, Dorset, UK*

Calculations have been performed for the flow along long thin cylinders using a variety of methods, from a boundary layer code with a turbulence model to a full, time accurate, Navier–Stokes solver. The results have been validated by comparison with those from experiments. It has been found that there are major differences between the flow on a cylinder and the equivalent flow on a flat plate. The wall shear stress tends to a constant mean value downstream, with the flow near the surface independent of the downstream coordinate. The outer part of the boundary layer continues to evolve, with the boundary layer growing in thickness as the square root of the distance. Calculations of the power spectral density of the surface pressure fluctuations show that the noise generated by the turbulence initially increases as the radius of the cylinder is decreased, but eventually decreases as the radius is decreased further.

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