Special Issue

Transonic Flow

Message from the Guest Editor

Transonic flow research has been of critical importance since the development of high-speed propellor aeroplanes and turbojet engines in the mid-1940s. The transonic flow regime has been, and remains, a challenge both for computational prediction and experimental simulation. The close coupling of the shock waves arising from the compressibility of the air and the viscous flow on the aircraft surfaces leads to highly unsteady and complicated flows that often involve detrimental flow separations. These can lead to unsteady loading that can cause structural vibrations of aircraft components. An understanding of unsteady transonic flow is therefore fundamental to the safe design of high-speed aircraft. Today's aircraft industry is challenged to develop revolutionary new aircraft concepts to address the aviation impact on climate change and noise. This is driving reassessments in design philosophy to achieve step changes in aerodynamic and propulsive efficiency, involving much closer coupling of the aircraft fuselage, wings, and engines.

Guest Editor

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