DIFFRACTION OF THE TWO-SHOCK CONFIGURATION OVER A CYLINDRICAL SURFACE

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This paper deals with the numerical research of the interaction between an incident shock wave (SW) and a convex 2D-obstacle. The obstacle has a plane inclined front surface and a convex cylindrical back one. A SW reflects from the first surface and then a new shock-wave configuration diffracts over the second surface. The aim of this investigation is to study diffraction of the shock-wave configuration with the angle of diffraction continuously changing. The numerical results are obtained by integrating the Euler equations. The features of the flow field caused by the simultaneous diffraction of two shock waves (incident and reflected) are revealed. Change of the shape of the rear-facing shock wave and its propagation along the surface are studied. It is shown that the origin of the vortex is not associated with the behavior of the end of the slipstream (the TU-layer) but results from the specific distribution of parameters along the surface. It is found that the separation line does not coincide with the TU-layer during the non-stationary stage, but they merge when the stationary flow over the body is achieved.