

## **MODIFICATION OF SHOCK WAVE DIFFRACTION BY PULSE GAS DISCHARGE**

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Among a number of problems connected to the pulse detonation engine, the phenomena of shock wave diffraction (reflection, focusing) remains topical. Recently researches of plasma assisted combustion and also research of flow control by the gas discharge of various types are now intensively conducted. Thus the influence of the pulse gas discharge on the non-stationary shock waves interaction is investigated insufficiently. The given work is devoted to the effect of the pulse gas discharge on the non-stationary shock waves interaction during the formation of three-shock configurations. The experimental results in the shock tube on a correlation the pulse air discharge near cone surface with interaction of a shock wave with a cone of half-angle  $24^\circ$  are submitted. The research was carried out at the initial pressure of 20 torr and Mach of incident shock 2.2 – 2.5. Visualization of a flow picture was carried out with measurement of the gas discharge parameters. The discharge evolved along the cone at a voltage close to a breakdown (1,4 - 1,9 kV) 300 - 2600  $\mu\text{sec}$  before the arrival of a shock to the cone apex. As a result of our research, let to point a new evolution of the flow topology and the shock behavior formed at an exit of the discharge region and grooving up Mach configuration observed at a cone in the absence of the gas discharge. The found out phenomena are essential during the interaction of a non-stationary shock in the presence of the local discharge plasma formations resulting in a radical change of the flow picture. The work is carried out at support of RFBR (Grant RFBR 03-01-00730) and Program №20 Presidium of RAS.