

Abstract Submitted
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Shock Wave Drag Coefficients in Argon Glow Discharge Plasma¹

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Troy University, Troy, AL — Mach 2 shock waves are launched into a weakly ionized dc glow discharge plasma. Four pairs of laser beams are setup across the plasma and spaced over the entire positive column. Laser deflections caused by the gradient in the shock wave gas density are recorded on an oscilloscope to obtain the time history of the shock wave propagation through plasma. In this way, multipoint shock wave velocities are measured over a range of operating argon gas pressure from 3-15 Torr and discharge current from 0-70 mA. The shock wave propagation velocity in plasma is seen to increase with increasing discharge current. Shock wave drag coefficients are determined from the functional dependence of the velocity on the position.

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