Measurements of magnetoresistance of shock-compressed argon plasma

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The experimental results of influence of a transverse magnetic field on electrical conductivity and resistance of plasma are presented. The plasma was generated behind front of shock wave in explored gas with the help of linear explosive generators. Impulse magnetic field with induction up to 20 T was formed inside solenoid reeled on the generator channel. A hydrodynamic flow with small magnetic Reynolds numbers was realized in direct shock wave to ensure free penetration of a magnetic field in the plasma. The plasma parameters were measured by probe techniques. The states with typical parameters: temperature T=0.9 – 1.3 10^4 K, pressure P=120 – 190 bar, electronic density N_e=7.3 10^{16} – 1.8 10^{18} cm^{-3}, Debye parameter of nonideality $\Gamma_D = \frac{e^2}{r_D k_B T}$ =0.1–0.3 were investigated. The influence of magnetic field on transport properties of shock compressed argon plasma was registered. The comparison of experimental results with different transport models of non-ideal plasma was carried out.