Diploma thesis abstract

by **Arslanov D.D.**

Generation and diagnostic of cluster beams of xenon by adiabatic explosion gas through conical nozzle.

Developed and created experimental setup for formation a cluster beam by adiabatic expansion of gas through impact nozzle, consisting of a stagnation chamber, impact conical nozzle with electronic control system piezoceramics valve, interactions chamber, evacuation system. Developed a diagnostic scheme of cluster beams parameters Rayleigh scattering signal UV radiation excimer XeCl laser. In the pressure range of Xe above valve 1-6 atm received quadratic dependence Rayleigh scattering signal from the pressure. Have parameter estimates of cluster beam for an ideal impact conical nozzle. Framed scheme and realized a test experiments about registration of absorbed energy and X-ray emission by the interaction of radiation femtosecond Cr:forsterite laser system with intensity 10^{14} - 10^{15} W/cm^2 with Xe clusters. Registered signal from the plasma in the UV region, which showed a presence cluster in interaction region. The results of these experiments indicate about estimated gas flow condition from the quality of manufacture nozzle.

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