



Stopping power measurement for 100 keV/u Fe ions in hydrogen plasma

R.O Gavrilin*, A.O. Khurchiev, D.S. Kolesnikov, S.A. Visotskiy, R.P. Kuibeda, P.A. Fedin, A.V. Bogdanov, V.A. Panyushkin A.V. Kantsyrev, I.V. Roudskoy, S.M. Savin, A.A. Golubev.

Motivation:

Measurement of ion energy losses in the ionized matter belongs to high energy density physics and inertial fusion with heavy ion beams research. This work update experimental data of low energy heavy ions interaction in cold full-ionized plasma with a density near 10^{18} cm^{-2} is represent

- Plasma parameters was obtained by emission spectroscopy and laser interferometry methods. Maximal reached linear electron density is $1.19 \times 10^{18} \text{ cm}^{-2}$
- Energy losses of Fe^{+2} ions in plasma was measured and analysed for more than 1500 shots.
- The obtained average stopping power value of hydrogen plasma is $S_{\text{Fe}} = (860 \pm 130) \text{ MeV}/(\text{mg}/\text{cm}^2)$ stopping power of ionized hydrogen is **more than 15 times larger** than the stopping power of a cold gas.

