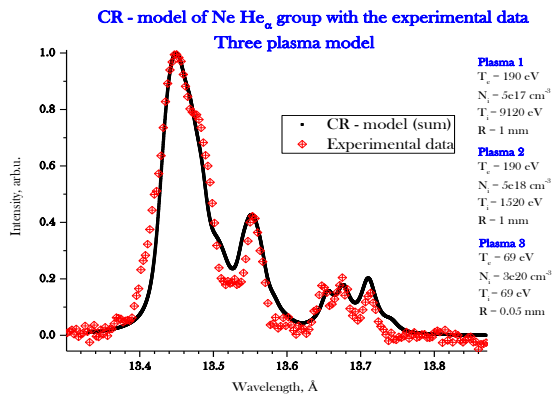


Analysis of the K-radiation structure for the determination of HED-plasma parameters and their spatial variations along the line of view

V. Bernshtam, E. Kroupp, A. Starobinets, O. Nedostup, Yu. Zarnitsky, Yu. Kuzminykh, and Y. Maron

Faculty of Physics, Weizmann institute of Science, Rehovot, Israel.

The spectral structures of the He α and Ly α groups of lines are strongly dependent on the electron temperature in the plasma, on the plasma charge state composition, and the presence of fast electrons. We analyze the effect of the various parameters on the features of the spectral structures, and demonstrate methods to determine electron-temperature gradients in the plasma, and to infer bounds on the electron density. The analysis includes fits to the satellites emitted from plasmas of rather-different electron temperature, and discrimination of satellites due to inner shell excitations and ionizations. The analysis is applied to K-emission data obtained in our neon-puff Z-pinch experiment [1, 2]. As a result, we obtain quantitative estimates of the simultaneous contributions of plasmas of various densities and temperatures to the spectrogram.



1. References

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