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P1.1066 Statistical modeling of heavy ions quasicontinuum in thermonuclear plasmas

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See the full abstract here:
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The heavy ions quasicontinuum (in the 4-8 nm spectral range) presently was observed on many modern thermonuclear installations. In particular it could be used for monitoring the tungsten transport. The statistical modeling of heavy ions is proposed to describe general features of these spectra. It considers the ions excitations in terms of the collective oscillations with plasma frequencies, determined by the local atomic electron density [1]. The electron density distribution of the outer ion shells is approximated by the Slater-type functions $n(r)$ n_Sl $(r) = Ar^2 e^{-2} r$. As this distribution has a maximum, it results in a sharp cut of the spectra at the specific short wave length for a given shell of a given ion within the local plasma frequency model. Just this general feature is observed in the experimental spectra on different installations [2-5]. Fig. 1 demonstrates the correspondence of the observed quasicontinuum of tungsten ions with the statistical modeling.

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