

Abstract Submitted  
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**The influence of the local volume fluctuations on the equation-of-state of hot and dense plasmas** DAVID SALZMANN, Department of Particle Physics, Weizmann Institute of Science, Rehovot, Israel, DIMA FISHER, Department of Neurobiology, Weizmann Institute of Science, Rehovot, Israel, AVRAHAM BARSHALOM, NRCN, P.O.Box 9001, Israel, JOSEPH OREG, Artep Inc. Ellicott City MD 21042 , USA — Generally, equation-of-state (EOS) of hot and dense plasmas is computed under the assumption that there is a constant volume available to every ion/atom in the plasma. In the present paper we combined two recently developed models to evaluate the influence of local density fluctuations around the ions on the corresponding EOS. The first of these is the so-called Ion Ellipsoid Model (IEM). IEM assumes that the local volume of the ion is a 3-dimensional ellipsoidal enclosure. Full description of the model is given in Ref. [1]. From IEM semi-empirical formulas were derived for the ions volume distribution function [1] for  $0 < \Gamma < 16$ , where  $\Gamma$  is the plasma coupling constant. The EOS was computed by means of the EOSTA model [2], that combines and extends the STA and INFERNO models to calculate opacities and EOS on the same footing. We will describe the model and present preliminary results indicating the effect of the volume fluctuations around the ions on EOS results.

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