

# About “Cold” and “Heat” Methods to Calculate Ionization Potentials of High-charged Ions

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The statistical model of Thomas-Fermi and its modifications with the different corrections (quantum, exchange, shell) are used to estimate the ionization potentials of ions.

Two variants, “cold” and “heat” are discussed. In the first one the ionization energies and potentials of free ions (under zero temperature) are calculated, then the same characteristics are computed for the compressed ions. The dependence of the results on a compression state is analyzed.

In the second variant the characteristics of an ideal plasma – chemical potential  $\mu(T)$ , ionization state  $z(T)$ , ionization energy  $\epsilon(T)$  – are calculated as the temperature functions. By elimination the temperature out these relations one can get the dependence  $\mu(z)$ ,  $\epsilon(z)$  to estimate the ionization potential of ion  $z$ .