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Pseudo-Potentials in Dense and He-like Hot temperature Plasmas CLAUDE DEUTSCH, HAMID RAHAL, LPGP UParis-Sud, HEEFFECPOT COLLABORATION — Extending our former derivations in dense and high temperature plasmas of hydrogenic effective interactions mimicking the Heisenberg uncertainty principle [1,2], we worked out in a canonical ensemble, effective interactions in He-like plasmas where an orbital 1s electron remains strongly tightly to the He-like ions. The plasma electrons are then taken into account through appropriate Slater sums obtained in the most economical hydrogenic extension of the He-like bound and scattered states with angular orbital momentum $l < 3$. Ground states are described by a multi-parametric HF approximation [3]. We thus obtain Diffraction-corrected electron-ion pseudo-potentials taking into account of a polarizable and nonpointlike ion core. Very large enhancements and discrepancies are obtained when they are contrasted to their H-like homologs with ion charge $Z=2,10$ and 92. These results are of obvious significance for He-like warm dense matter plasmas. Ionization is also considered.

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- [2] C. Deutsch, Y. Furutani and M.M. Gombert, Phys. Rep. 69,86 (1981)
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