non-linear screening scaling in asymmetric complex plasmas [[1]](#footnote-1)\*)

DOI: 10.34854/ICPAF.2021.48.1.100

1,2Martynova I., 1,2Iosilevskiy I.

1Joint Institute for High Temperatures of the Russian Academy of Sciences, martina1204@yandex.ru,
2Moscow Institute of Physics and Technology (National Research University).

In this paper, two-component electroneutral systems of finite-size macroions and oppositely charged point microions in an electroneutral spherically symmetrical Wigner-Seitz cell with a central macroion are studied. The features of non-linear screening of highly charged macroions by microions in classical asymmetrically charged complex plasma are investigated. This work is devoted to the problem of the relationship between the effective ("visible") charge of the macroion *Z*\* and its initial charge *Z* taking into account the non-linear screening effect. It is analyzed how this ratio changes with an increase in the charge of the central macroion. The characteristics of two modes are calculated in this dependence of the effective charge on the initial one [1,2]. The self-similarity of the indicated dependence Z\*(Z) has been demonstrated for various temperatures of the system, macroions concentrations and sizes of macroions [3].

This research was supported by The Ministry of Science and Higher Education of the Russian Federation (Agreement with Joint Institute forHigh Temperatures RAS No 075-15-2020-785).

References

1. Martynova I.A., Iosilevskiy I.L., J. Phys.: Conf. Ser., 2019, Vol. 946, P. 012147.
2. Martynova I.A., Iosilevskiy I.L., Contrib. Plasma Phys., 2019, Vol. 58, P. 203.
3. Martynova I.A., Iosilevskiy I.L., Contrib. Plasma Phys., 2020, e202000142.
1. \*) [abstracts of this report in Russian](../ru/EC-Martynova.docx) [↑](#footnote-ref-1)