

**SELF-CONSISTENT RELAXATION THEORY OF
COLLECTIVE DYNAMICS IN STRONGLY COUPLED
YUKAWA ONE-COMPONENT PLASMAS**

Fairushin I.I., Mokshin A.V.*

KFU, Kazan, Russia

**fairushin_ilmaz@mail.ru*

In this work the self-consistent relaxation theory is applied to describe the collective ion dynamics in strongly coupled Yukawa classical one-component plasmas under equilibrium states corresponding to intermediate screening regimes. The main characteristics of the equilibrium collective dynamics – the spectrum of the dynamic structure factor, the dispersion parameters, the speed of sound, and the sound attenuation – are determined within the framework of the theory without using any adjustable parameters. The results demonstrate agreement with molecular dynamics simulations and alternative theoretical approaches.

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