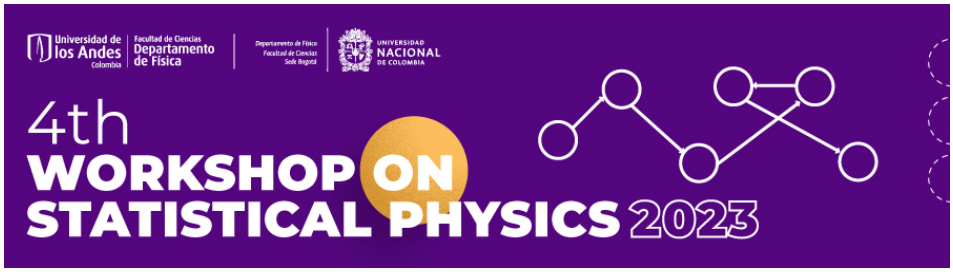

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No-Fusion and Fusion Process in Log-Coulomb Gases

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We study the non-equilibrium dynamics for no-fusion and fusion events in a Dyson gas of N charged particles interacting through a logarithmic Coulomb potential surrounded by a thermal bath at a reduced temperature $\beta = q_0^2/(k_B T)$, where q_0 is the charge per particle and T is temperature of the bath. First, we characterize the relaxation-time, τ, in the regime for no-fusion processes, for which the system reach a "thermal equilibrium" and show how a time-law-scale governs the time-evolution for this regime. We prove the validity of Wigner's Surmise for $\beta \geq 1.0$ compared with those values used in Gaussian ensembles for times greater than relaxation time $t \gg \tau$, i.e., when the system reached the thermal equilibrium. Finally, we study the time-evolution of nearest neighbours distance distributions for different β in the regime for fusion events and compare its dynamics with no-fusion regime.

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