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Effect of Viscosity in Void Structure with Interacting Variable Charge Dust Grains

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Abstract : The void is a dust free region inside the dust cloud in the plasma. It is found that the dust grain charge variation lead to the extension of the void. Moreover, for bigger dust grains, it is seen that the wave-like structure recedes when charge variation is dealt with. Furthermore, as the grain-grain distance is inversely proportional to density, the grain-grain interaction gets more important for a denser dust population and is to be included in momentum equation. For the result indicate above, the plasma is considered non viscous. But in fact, it's not always true. Some authors measured experimentally the viscosity of this background and found that the viscosity of dusty plasma increase with background gas pressure. In this paper, we tack account the viscosity of the fluid, and we compare the result with that found in the recent work.

Keywords : voids, dusty plasmas, variable charge, viscosity
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