

Shock Waves in a Dusty Plasma with Positive and Negative Dust where Ions are Non-Thermal

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A four-component dusty plasma consisting of electrons, ions, and negatively as well as positively charged dust grains has been considered. Shock waves may exist in such a four-component dusty plasma. The basic characteristics of shock waves have been theoretically investigated by employing reductive perturbation technique (RPT). It is found that negative as well as positive shock potentials are present in such dusty plasma. The present results may be useful for understanding the existence of nonlinear potential structures that are observed in different regions of space (viz. cometary tails, lower and upper mesosphere, Jupiter's magnetosphere, interstellar media, etc).

Key words: Dusty Plasma; Shock Waves; Non-Thermal; Dust Acoustic (DA) Wave.