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Retarded Gravity and the Dark Matter Problem

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A laboratory plasma-wall interaction-based astrophysical gravito-electrostatic sheath (GES) model, which has originally been reported to investigate the solar surface emission mechanism of the solar wind, is herein methodologically applied to analyze the dynamic stability of the entire non-thermal solar plasmas. The effects of non-thermality, fluid turbulence, and magnetic pressure are simultaneously considered in the formulation of the original GES structure equations. Accordingly, the entire GES-based solar plasma system, which is an amalgamation of the self-gravitating subsonic solar interior plasma (SIP, bounded) and non-gravitating supersonic solar wind plasma (SWP, unbounded), is destabilized relative to the GES equilibrium. Application of normal spherical perturbation mode ansatz herein divulges the evolution of both dispersive and non-dispersive modal features of the modified GES collective wave excitations dictated by a distinct pair of linear dispersion laws on both the SIP and SWP scales. The utmost reliability of the proposed dispersion laws is concretized with the help of an exact dispersion shape matching with the previous results available in the literature. It is herewith inferred that the thermostatistical GES stability depends mainly and sensitively on the magnetic field, plasma density, and plasma temperature. A numerical platform illustrates the various especial stability properties of the plasma fluctuations. It is demonstrated with the help of both color and line profiles. It is speculated that dispersive features are more pronounced in the gravitational domains (SIP) against the electrostatic ones (SWP), and so forth.

Biography

In the years 1998-1999 Asher Yahalom joined the Israeli Free Electron Laser Group both as postdoctoral fellow and as a project manager, he is a member of the group ever since. Among his contributions to the project are theoretical contributions and technological contributions. As part of his duties, he established the FEL user center of which he now directs, the aim of the FEL user center is to establish applications for FEL radiation including medical applications. Currently much of his efforts are directed toward the study of the implication of retardation phenomena in electromagnetics in relativistic engines and in gravity with emphasis on galactic systems.

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