Abstract Submitted
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Dynamics of Quasi-Electrostatic Whistler waves in Earth's Radiation belts[1] RAVINDER GOYAL, Department of Physics and Astrophysics, University of Delhi, RP SHARMA, Indian Institute of Technology (IIT) Delhi, India, DN GUPTA, Department of Physics and Astrophysics, University of Delhi, India — A numerical model is proposed to study the dynamics of high amplitude quasi-electrostatic whistler waves propagating near resonance cone angle and their interaction with finite frequency kinetic Alfvén waves (KAWs) in Earth's radiation belts. The quasi-electrostatic character of whistlers is narrated by dynamics of wave propagating near resonance cone. A high amplitude whistler wave packet is obtained using the present analysis which has also been observed by S/WAVES instrument onboard STEREO. The numerical simulation technique employed to study the dynamics, leads to localization (channeling) of waves as well as turbulent spectrum suggesting the transfer of wave energy over a range of frequencies. The turbulent spectrum also indicates the presence of quasi-electrostatic whistlers and density fluctuations associated with KAW in radiation belts plasma. The ponderomotive force of pump quasi-electrostatic whistlers (high frequency) is used to excite relatively much lower frequency waves (KAWs).The wave localization and steeper spectra could be responsible for particle energization or heating in radiation belts.

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