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Nonlinear dynamics of the solitary vortices and the wave structures in the complex media

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Based on mathematical models of describing the multidimensional soliton-type structures in complex media (ionospheric atmosphere, hydrosphere, ionospheric and magnetospheric plasma) the nonlinear dynamics of electromagnetic solitary vortices and the wave structures have been studied. Nonlinear wave structures can be a purely monopole vortex, a transverse vortex chain, and/or a longitudinal vortex path against the background of an inhomogeneous zonal wind, depending on the shear flow velocity profile. The accumulation of such vortices in the ionospheric medium can generate a strongly turbulent state. The interaction of soliton type multidimensional structures in the complex media, described by DNSL class of equations taking into account of dispersive and dissipative effects are studied numerically and interesting results are obtained.

Biography

Khatuna Chargazia has completed her PhD from Ivane Javakishvili Tbilisi State University in 2006 and Postdoctoral studies from M Nodia Institute of Geophysics. She is the team Leader of the group of ionospheric studies at the Tbilisi State University. She has published more than 70 papers in reputed journals.

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