

Studies of shock phenomena related to the electron foreshock

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Physical processes in the space plasma is governed by wave-particle interactions. However, electron acceleration and thermalization is treated by Mirror reflection and potential heating regime, and the contribution of wave-electron interaction process is not well known. We have studied wave-electron interactions in the bow shock and foreshock regions by the GEOTAIL spacecraft. Based on these works, we will study the microscopic process of electron acceleration and heating process in the shock by the observations of 3D electron distribution function and plasma wave-forms, and numerical simulations in the electron processes. In this talk, we will summarize the previous works and report the recent studies of wave observations by WIND and electron observations by Geotail.