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PhD: Peking University, China, 2008
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Research Activities (July 2009 – June 2010)

- My major activities are strongly associated with the THEMIS mission, especially on the analysis of the particle data collected at the Earth's magnetotail thin current sheets (TCSs).
 - Method developments to determine the equilibrium TCS profiles on the basis of single-point observations of the particle distribution functions, which is based on a best-fit procedure to compare the observed particle distributions with theoretical models.
 - Numerical simulations performed to reproduce the observed evolution of the ion distributions prior to the substorm onset, with the gradual appearance of a separated peak of phase space densities, which could serve as the diagnostic signatures of magnetic reconnection.
 - Reproduction of the observed ion distributions ahead of the Earthward-propagating dipolarization fronts, to suggest the preconditioning effect of the dipolarization front to the ambient plasma before its arrival.

Papers Published (July 2009 – June 2010)

- **Zhou, X.-Z.**, V. Angelopoulos, A. Runov, M. I. Sitnov, Q.-G. Zong, and Z. Y. Pu (2009), Ion distributions near the reconnection sites: Comparison between simulations and THEMIS observations, *J. Geophys. Res.*, 114, A12211, doi:10.1029/2009JA014614.
- **Zhou, X.-Z.**, Z. Y. Pu, Q.-G. Zong, P. Song, S. Y. Fu, J. Wang, and H. Zhang (2009), On the error estimation of multi-spacecraft timing method, *Ann. Geophys.*, 27, 3949-3955.
- Zong, Q.-G., **X.-Z. Zhou**, Y. F. Wang, X. Li, P. Song, D. N. Baker, T. A. Fritz, P. W. Daly, M. Dunlop, and A. Pedersen (2009), Energetic electron response to ULF waves induced by interplanetary shocks in the outer radiation belt, *J. Geophys. Res.*, 114, A10204, doi:10.1029/2009JA014393.
- Song, P., V. M. Vasyliunas, and **X.-Z. Zhou** (2009), Magnetosphere-ionosphere/thermosphere coupling: Self-consistent solutions for a one-dimensional stratified ionosphere in three-fluid theory, *J. Geophys. Res.*, 114, A08213, doi:10.1029/2008JA013629.
- Pu, Z. Y., X. N. Chu, X. Cao, V. Mishin, V. Angelopoulos, J. Wang, Y. Wei, Q. G. Zong, S. Y. Fu, L. Xie, K.-H. Glassmeier, H. Frey, C. T. Russell, J. Liu, J. McFadden, D. Larson, S. Mende, I. Mann, D. Sibeck, L. A. Saponova, M. V. Tolochko, T. I. Saifudinova, Z. H. Yao, X. G. Wang, C. J. Xiao, **X. Z. Zhou**, H. Reme, and E. Lucek (2010), THEMIS observations of substorms on 26 February 2008 initiated by magnetotail reconnection, *J. Geophys. Res.*, 115, A02212, doi:10.1029/2009JA014217.