

INNER MAGNETOSPHERE: REPORTER REVIEW

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The purpose of this paper is to review research achievements regarding Earth's inner magnetosphere including the plasmasphere, ring current, and radiation belt based on approximately 200 scientific papers that were published during the period from June 2007 to April 2009. Recent analysis and modeling efforts have revealed detailed structure and dynamics of the inner magnetosphere, and developed more sophisticated techniques to diagnose the inner magnetosphere. In addition, it has been clearly demonstrated that inter-energy, inter-region, and inter-scale couplings are essentially important to fully understand the inner magnetosphere. This implies that the inner magnetosphere should be strongly tied with the other region including the outer magnetosphere, ionosphere, and solar wind. That is, a result can be a cause of the other. Clearly, there seems to be, at least, two ways forward for future research on the inner magnetosphere. The first is to focus on elementary processes including, for example, interaction between particles and waves. The second is to focus on comprehensive processes including inter-energy, inter-region, and inter-scale couplings. Multi-satellite observations and comprehensive simulations will be one of the promising avenues.

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