

# **Collisionless shock structure and multipoint measurements**

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Collisionless shock structure has been studied theoretically, numerically, and observationally for about forty years. Much has been understood from analysis of single spacecraft measurements and subsequent analytical developments. Some features related to particle energization inside the shock transition layer are still being studied and wait for their explanation. Since the particle behavior crucially depends on the fine structure of the shock front, knowledge of the relevant scales and time-dependence remains the important and often lacking piece of information. Multi-spacecraft observations were expected to be able to provide necessary information and to separate spatial and temporal variations. During several years of Cluster operation sufficient amount of data should have been collected to aid theoretical attempts. We are still waiting for a breakthrough.