

## shock-shock collisions and particle acceleration

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When an interplanetary shock collides against the bow shock, not only shocks but also several discontinuities are generated. There are variety of these discontinuities.

Particle acceleration in the case of shock-shock collisions has not been well discussed .

Geotail data of March twenty third ,1995 and May twenty third ,2002 showed that there were shock-shock collisions .The latter showed that there were particle acceleration of ions to several ten keV and the former did not.

We made the different geometrical models of shock-shock collisions and discuss what mechanism is attributed to the particle acceleration of ions and why particle acceleration occurred in 2002 and did not in 1995.