

ION ACCELERATION IN FRONT OF THE EARTH'S PARALLEL BOW SHOCK: NEW RESULTS AND OPEN QUESTIONS

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In our presentation we analyze the three important requirements of an efficient first order Fermi ion acceleration: injection, diffusive scattering and free escape boundary (or cross-field diffusion). Using simultaneous multi-spacecraft data provided by Cluster we present individual events that illustrate the details of the ion acceleration mechanism but also provide an insight how the mechanism can differ from event to event.