Acceleration of Anomalous Cosmic Rays at the Termination Shock

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Overview
Anomalous Cosmic Rays (ACRs) comprised of H and only those elements that are difficult to ionize, including He, N, O, Ne, and Ar, was given the name ACR because of its unusual composition. They are predicted to be accelerated at the Termination Shock (TS). Most of the current models are based on a spherical TS. Here we are using both a spherical TS and also a blunt TS to study the acceleration of ACRs.

Preliminary Results

Impact
ACRs are useful for studying the movement of energetic particles within the solar system, for learning the general properties of the heliosphere, and for studying the nature of interstellar material itself. Further the acceleration mechanism of ACRs is not yet properly explained since most theories didn’t match the observations of ACRs by Voyager I & II.

Explanation
American Astronautical Society (AAS) is dedicated to the advancement of space science and exploration. Greater intensity of cosmic rays in outer space is a potential hazard for astronauts since they can damage our DNA and cause cancer and radiation sickness. Further, they are also a hazard to electronic instrumentation in space; impacts of cosmic ray nuclei can cause computer memory bits to “flip” or small microcircuits to fail.

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