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Voyager 1 and 2 Measurements of Particle Acceleration at the Termination Shock and in the Heliosheath ROBERT DECKER, Applied Physics Laboratory — We discuss energetic charged particle intensities, energy spectra, composition, and angular distributions measured at Voyager 1 and 2 near the termination shock (TS), in the heliosheath (HSH), and in the local interstellar medium (LISM) just outside the heliopause (HP). Voyager 1 (Voyager 2) crossed the TS in late 2004 at 94 AU (mid-2007 at 84 AU), explored a 28 AU (35 AU) wide HSH for 8 years (11 years), and crossed the HP in mid-2012 at 122 AU (late 2018 at 119 AU). Before the TS crossings, both Voyagers saw beam-like energetic ion intensities moving away from the TS along the solar wind magnetic field. These data implied a TS blunted near its nose region, with pre-TS ions produced by acceleration and reflection at the TS and by escape from the HSH. The lower energy portion of the TS/HSH ion spectrum, called TS particles (TSPs), is mainly interstellar pickup ions heated and accelerated at the TS and by other HSH processes. It was expected that higher energy portion of this ion spectrum, anomalous cosmic rays (ACRs), was accelerated at the TS. But, in situ data from both Voyagers showed this not to be the case, at least near the TS nose region. It is now believed ACRs are accelerated along the TS flank. We also describe details of TSP and ACR ions measured in the near-HP LISM.

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