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The Emerging New View of the Outer Heliosphere J.R. JOKIPII,
University of Arizona — In August, 2007, Voyager 2 crossed the heliospheric termination shock 84 AU from the Sun, following Voyager 1, which crossed the shock in late 2004 at 94 AU. They obtained *in situ* data which, combined with remote observations, have transformed our understanding of the outer heliosphere. The existence of the solar wind and heliosphere was not known prior to 50 years ago. Over the intervening decades, remote and *in situ* observations together with theory and modeling established the heliosphere and gradually revealed much of its structure and dynamics. The solar wind is radial and supersonic from very near the Sun out to the termination shock, where it becomes subsonic. The large-scale structure of the plasma and magnetic field *inside* of the shock are determined by the initial and boundary conditions near the Sun, and depend very little on the interstellar medium. Cosmic rays and neutral particles have served as invaluable probes of distant regions, permitting a reasonable picture of the global heliosphere to be assembled, but even the distance scales remained highly uncertain. The *in situ* measurements by the Voyagers answered many questions but, inevitably, raised others. Both Voyagers are now moving further from the Sun, taking measurements in the heliosheath and heading toward the heliopause where the first *in situ* measurements of the interstellar plasma will be taken. In this talk I will summarize the current picture and discuss some of the new and ongoing issues.

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