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The coupling between pick-up ions and energetic neutral atoms in the heliosphere JACOB HEERIKHUISEN, ERIC ZIRNSTEIN, GARY ZANK, NIKOLAI POGORELOV, University of Alabama in Huntsville — The expansion of the solar wind into the interstellar medium creates the heliosphere. While the ionized components of the solar wind and interstellar medium don't mix, neutrals from interstellar space enter the heliosphere where they may experience charge-exchange collisions with ions. The charge-exchange process creates a new non-thermal ion known as a pick-up ion. Such ions tend to experience different dynamic processes at the solar wind termination shock, or indeed any other shocks, and hence give rise to a broad non-thermal population of ions in the heliosheath. Charge-exchange of non-thermal ions gives rise to a population of energetic neutrals which in turn form a seed population for pick-up ions in the interstellar medium near the heliosphere. In this talk we discuss the coupling of various pick-up ion and energetic neutral populations throughout the heliospheric interface and present our latest simulation results.

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