Hybrid Simulations of Interstellar Pickup Ions at the Solar Wind Termination Shock Revisited and Improved

Science Question:

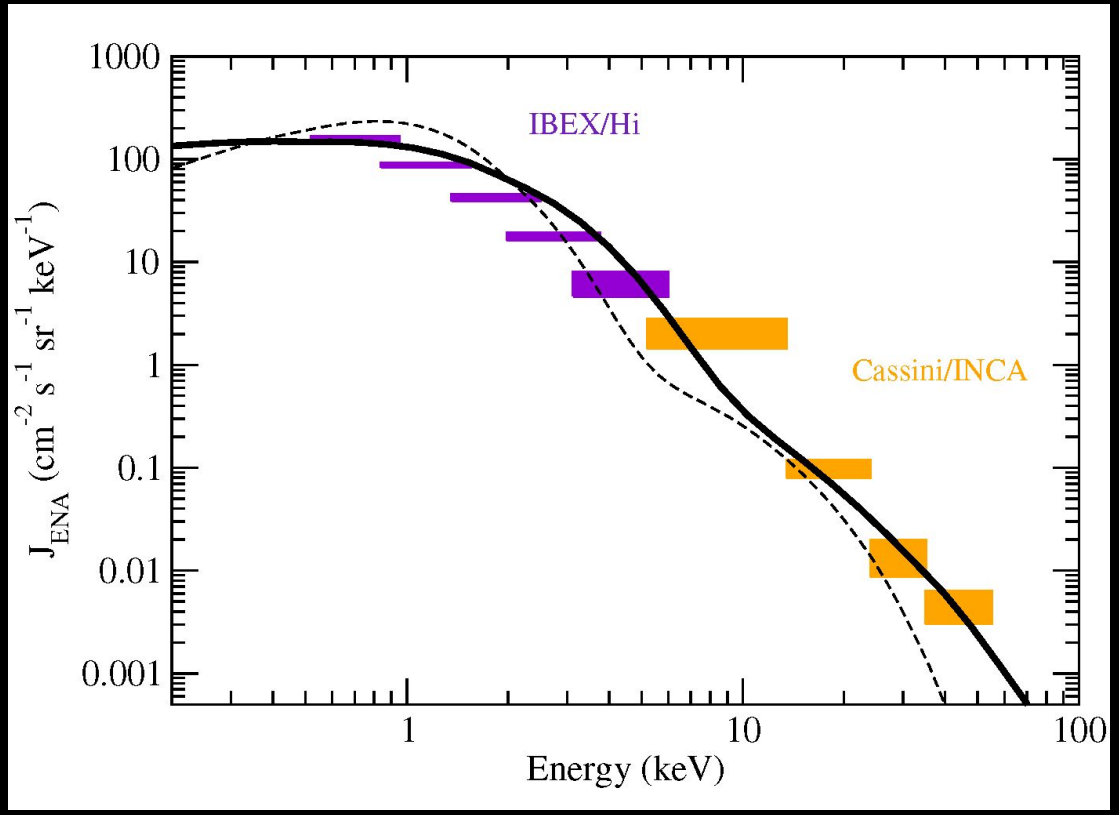
- What is the cause of the discrepancy between observed energetic neutral atom (ENA) intensity energy spectrum along the Voyager 2 line-of-sight and estimates based on hybrid simulations?

Method:

- Revise hybrid simulations using improved pickup ion (PUI) distributions based on observations
- Am improved model of PUI distribution downstream of the termination shock is used to estimate the ENA flux
- New results are compared with IBEX/IBEX-Hi and Cassini/INCA observations of heliospheric ENAs

Key result:

- The agreement between ENA measurements and model estimates is significantly improved.
- Hybrid simulations now provide good estimates of the charged particle distributions in the heliosheath over a broad range of energies (0.1-50 keV)



Predicted ENA intensities along the Voyager 2 line-of-sight from the new simulations (solid curve), compared to prior ones (dashed curve), and to observations (filled boxes)

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