Signatures of Interchange Reconnection in the Solar Wind

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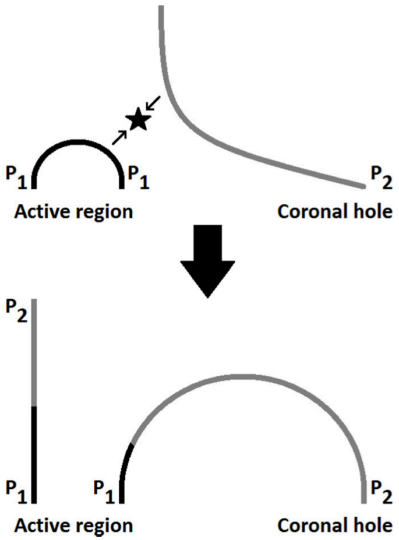
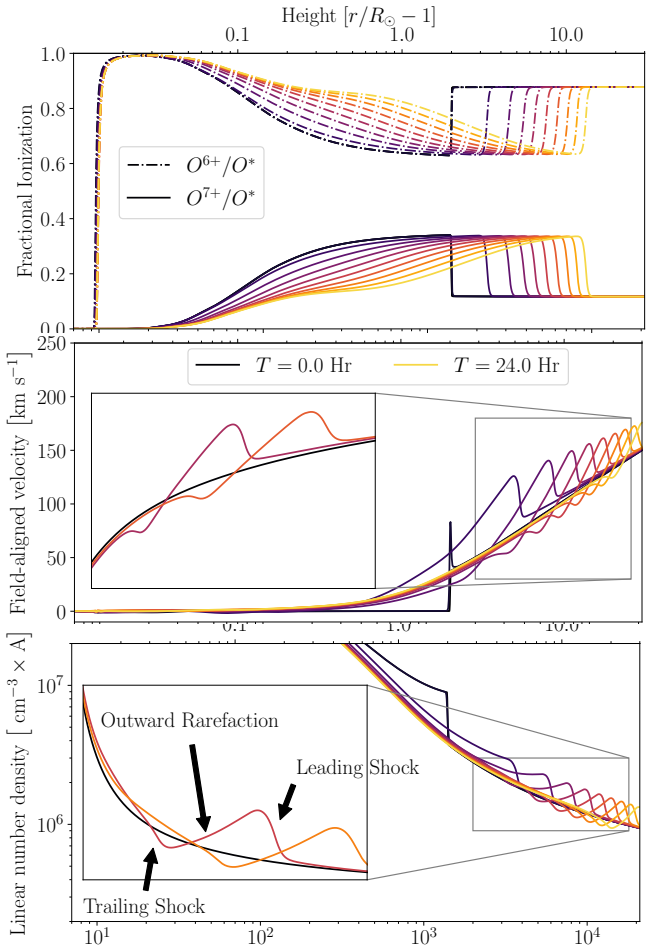
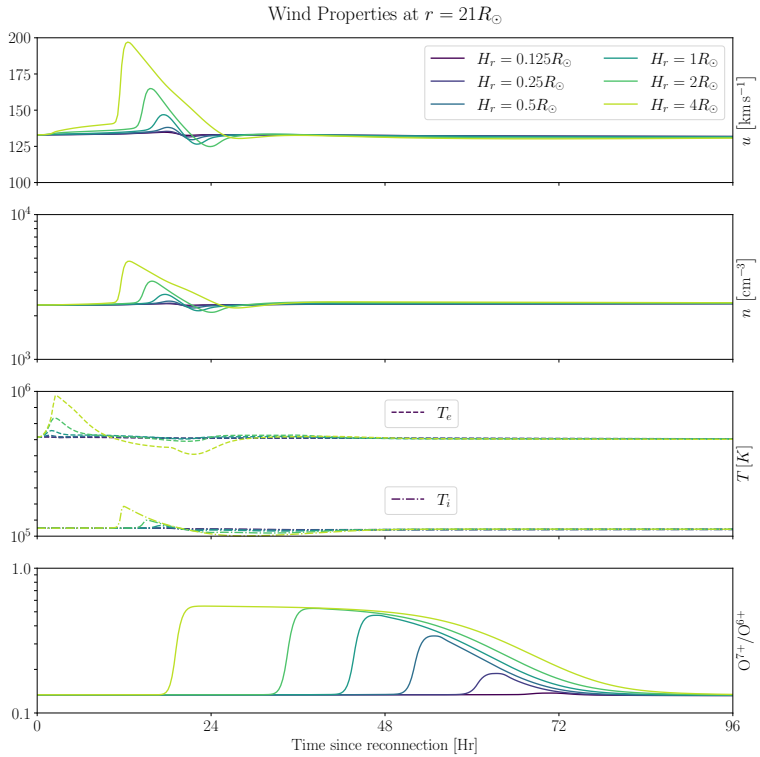
- Interchange reconnection between open and closed flux domains is thought to be a major contributor to the composition and dynamics of the slow solar wind.
- In this work we consider an idealized reconnection event between two radial field lines with identical heating profiles, one hydrostatic and one with a supersonic steady-state wind.



- The discontinuity first decomposes into a shock and rarefaction in the manner of a Riemann problem.
- The rarefaction reflects off of the bottom of the transition region into an outward rarefaction and a trailing shock.



- Signatures of these features arrive in the heliosphere at different times governed by the electron thermal speed, ion thermal speed, shock speed, and fluid speed.
- Critically, the fractional ionization ratios do not participate in the compressive shock dynamics, but are instead carried along by the trailing high-speed flow.



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