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Decades of density measurements made throughout the inner heliosphere show that the solar wind is often comprised of mesoscale structures, i.e. structures much larger than kinetic scales, but smaller than CMEs or SIRs. One type of mesoscale solar wind structure manifests as periodic trains of density enhancements, with scales of 0.2 mHz (~90 minutes) to 5 mHz (~ a few minutes). Studies of elemental composition during these periodic density structures demonstrates that they are created at the Sun as the solar wind is formed. We demonstrate that interchange reconnection of open fields and coronal loops along S-web arcs is likely involved, and that the history of the coronal heating those loops experienced is retained in the elemental composition variations. We also show that the interchange reconnection may be periodically driven by jetlets and/or transverse Alfvenic fluctuation. Furthermore, we show that there are likely two populations of periodic density structures: one associated with longer coronal loops in helmet streamers, and the other a more globally distributed phenomenon. Lastly, we describe how PUNCH can be used to understand the source of periodic density structures, and their evolution and interaction with turbulence through the inner heliosphere.
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