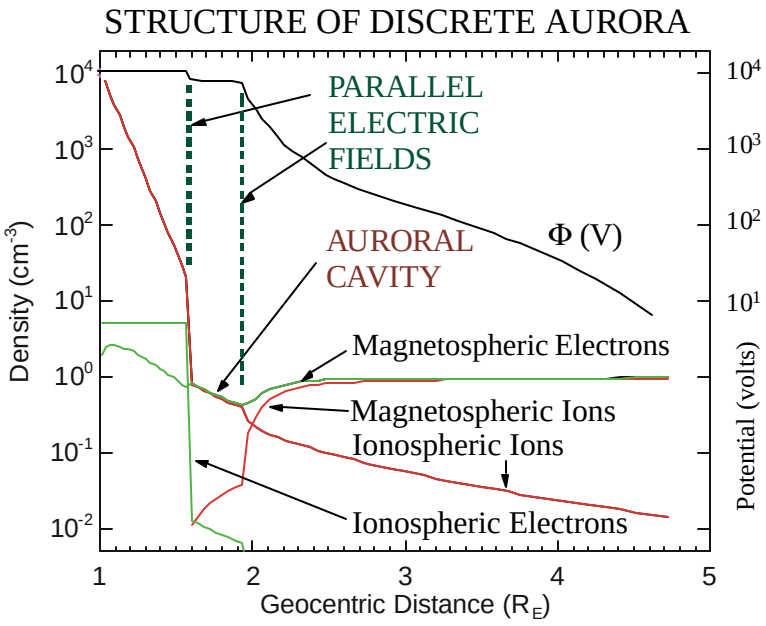
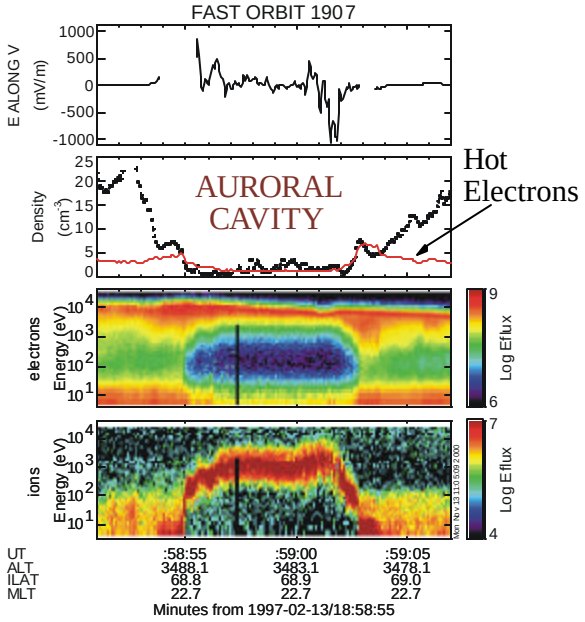
FAST Reveals the Structure of the Aurora Cavity

- The "Auroral Cavity" and its associated acceleration physics has been an enigma for 30 years.
- FAST flies directly through the cavities and finds that the dominant particles are accelerated downgoing *magnetospheric* electrons and accelerated upgoing *ionospheric* ions, and that *ionospheric* electrons and *magnetospheric* ions are excluded.
- These results have prompted computer simulations showing that the auroral cavity is bounded by two distinct parallel electric field transition layers.
- The transition layers form to maintain charge neutrality throughout the auroral cavity region by excluding ionospheric electrons and magnetospheric ions.





FAST Reveals the Structure of the Aurora Cavity