Energetic Characterization of Mercury's Exospheric Sodium Component

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Mercury's sodium exosphere has been several times observed with high spectral resolution from ground based observatories pointing out the energetic state of the sodium exospheric atoms relatively to the surface temperature.

Using THEMIS Solar telescope, we observed Mercury's sodium exosphere with very high spectral resolution at several Mercury's orbital positions. This very high spectral resolution allows us to derive for some good observing conditions the doppler shift and width of the sodium atoms. We will present two of these observations.

Starting from our 3D exospheric model, we developed a 3D radiative transfer model which allows us to properly treat the non-maxwellian state of the simulated sodium population. In this presentation, we will present the results of this comparison and our conclusions on the origin of the energetic state of Mercury's sodium exosphere.