



How ‘Coronal’ Are Suprathermal Solar Wind Electrons?

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In order to understand the Sun-heliosphere relationship it is vital to develop our knowledge of how solar wind origins affect its in-situ properties. We analyse ACE/SWICS and WIND/3DP data to test properties of solar wind suprathermal electron distributions for signatures of the coronal temperature at their origin. To do this we test for correlations with the oxygen charge state ratio $O7+/O6+$; an established proxy for coronal electron temperature. We find only a very weak but variable correlation between these parameters. We conclude, in contrast to earlier results, that an initial relationship between core electron temperature and suprathermal electron energy content may exist in the corona, but that in most cases no strong signatures remain at 1AU. We cannot yet confirm whether this is due to the effects of coronal conditions on the establishment of this relationship, or to alteration of the electron distributions by processing during transport to 1AU. Confirmation of this will be possible using Solar Orbiter to test whether the weakness of the relationship persists over a range of heliocentric distances. If the correlation strengthens when closer to the Sun, this would indicate an initial relationship which is being degraded en route to the observer.