OBSERVATIONAL ASSOCIATIONS BETWEEN THE SOLAR CORONA AND SOLAR INTERIOR

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Generated in the solar interior, magnetic fields make their way through the solar atmosphere, shaping solar wind flow and determining solar activity. Although essential for understanding and identifying the physical processes by which this occurs, there has been a lack of observational associations between the corona and interior of the Sun. A direct association was recently demonstrated when the latitudinal profile of the correlation of coronal density separated in latitude by 20 degrees was found to be similar to that of the alternating slow and fast zonal bands observed in the outer part of the solar convection zone (Woo et al., Ap.J., 538, L171, 2000). The latter are also evident on the surface of the Sun where they are known as torsional oscillations.

In this paper, we summarise further results from investigating and characterising the morphology of coronal density and its relationship to surface and subsurface solar flow using measurements by the High Altitude Observatory Mauna Loa Mk III K-coronemeter.

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