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The latitudinal dependence of the solar radiance

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Active regions and sunspots occur predominantly at low to mid heliographic latitudes. Hence, it seems reasonable to assume that the radiant output of the sun is not spherically symmetrical. Due to the relatively small inclination ($\sim$7.25°) of the solar rotation axis this asphericity is difficult to detect in integrated disk data taken from an ecliptic-bound vantage point. A histogram analysis of 13 years of VIRGO TSI data revealed a slight north-south asymmetry with maximal deviations of $\pm$4 parts in 10^5. Interestingly, the north-south asymmetry persists even after subtracting the simulated TSI data by Krivova et al. (2003) from the VIRGO TSI measurements. The Krivova time series attributes the TSI to magnetic activity patterns as observed by MDI (sunspots, faculae, and plage). The asymmetry thus seems to be of a different origin, i.e. unrelated to sunspots, faculae, or plage, although smaller magnetic structures might contribute to the asymmetry. We will also investigate a potential asymmetry in the equator-to-pole temperature gradient. At this point we can only speculate if the observed asymmetry is characteristic of solar cycle 23, which is covered by the VIRGO time series, or more fundamental. In any case it would be very interesting to extend the TSI vs. latitude curve towards higher heliographic latitudes.