

Solar Neutrinos and the Planets

A problem in the standard solar model has arisen recently – a disagreement between tests of surface metallicity (photospheric absorption lines) and interior metallicity (helioseismology). The discrepancy has an interesting connection to certain solar neutrino experiments (Borexino and especially SNO+), which may have the reach necessary to settle this question by directly measuring the amount of C and N in the Sun's core. Such a measurement is important, as the discrepancy may be connected to a very interesting stage of solar system formation – the last million years of the nebular disk, when the process of planetary formation scrubbed between 50 and 100 earth masses of metal from the remaining gas. The implications range from planet hunting to decoding the Sun's structure. I will describe very recent observations of solar twins that have made speculations of a planetary connection particularly interesting.