



## Solar Meridional Circulation from Doppler Shifts of the Fe I line at lambda 5250 Angstroms as Measured by the 150-foot Solar Tower Telescope at the Mt. Wilson Observatory

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Doppler shifts of the Fe I spectral line at lambda5250 Angstroms from the full solar disk obtained over the period 1986 to 2009 are analyzed to determine the circulation velocity of the solar surface along meridional planes. Simultaneous measurements of the Zeeman splitting of this line are used to obtain measurements of the solar magnetic field that are used to select low field points and impose corrections for the magnetically induced Doppler shift. The data utilized is from a new reduction that preserves the full spatial resolution of the original observations so that the circulation flow can be followed to latitudes of 80 degrees N/S. The deduced meridional flow is shown to differ from the circulation velocities derived from magnetic pattern movements. A reversed circulation pattern is seen in polar regions for three successive solar minima. An surge in circulation velocity at low latitudes is seen during the rising phases of cycles 22 and 23.

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