M12a Measuring and interpreting the amplitude of the cross-covariance function of solar seismic waves

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In time-distance helioseismology analysis, we compute cross-covariance functions of the solar oscillations and measure wave travel times to probe solar interior dynamics and structure. The travel times are most commonly used in standard time-distance helioseismology analyses, although other parameters of the cross-covariance functions, such as the amplitude, are useful in investigating various aspects of wave propagation in the Sun.

In this study we focus on measurements of the amplitude of the cross-covariance function. We derive spatial sensitivity kernels for amplitude perturbations and discuss their domain of validity. We also present measurements of the cross-covariance amplitude (and related error) using SDO/HMI observation Dopplergrams. Our preliminary analyses shows a correlation between the cross-covariance amplitude perturbations and the supergranulation pattern.