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Towards measuring magnetic twist in active regions using SDO/HMI

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Measurements of the magnetic field's twist play an important role in constraining dynamo theory, models of flux emergence and the prediction of flares. We aim to characterize methods of measuring twist directly from SDO/HMI vector magnetograms by generating Monte-Carlo synthetic data sets. By studying several example sunspots we found that the temporal fluctuations in the HMI vector magnetograms are spatially correlated. We have developed an empirical model for noise that includes these spatial correlations.

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