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An Improved Radioastronomical Method of Detecting Propagating Coronal Alfven Waves[1] STEVEN SPANGLER, University of Iowa — Several observational techniques indicate the presence of plasma turbulence in the solar corona. It is of interest to show that the turbulence propagates outward. The propagation speed constrains the dispersion relation of the turbulence. Faraday rotation fluctuations due to coronal turbulence diagnose turbulent magnetic field fluctuations. I discuss a new method for measuring propagating Faraday rotation fluctuations in the corona. The technique uses double radio sources in which the line of sight to one component passes through the corona at a greater radial distance than the other. The time series of Faraday rotation of the two components are analyzed in terms of correlation functions. A cross correlation function with significant value at non-zero lag indicates propagating fluctuations and gives the speed of propagation. The technique works directly with the measured Stokes parameters Q and U, not the polarization position angle χ. The technique is illustrated with a set of measurements made with the Very Large Array (VLA) radio telescope.

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