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Kubo Resistivity of magnetic flux ropes[1] WALTER GEKELMAN, TIM DEHAAS, PAT PRIBYL, STEPHEN VINCENA, BART VAN COMPERNOLLE, Department of Physics, University of California, Los Angeles, RICK SYDORA, University of Alberta, SHAWN WENJIE TANG, Department of Physics, University of California, Los Angeles — Magnetic flux ropes are bundles of twisted magnetic fields and their associated current. They are common on the surface of the sun (and presumably all other stars) and are observed to have a large range of sizes and lifetimes. They can become unstable and resulting in coronal mass ejections that can travel to earth and indeed, have been observed by satellites. Two side by side flux ropes are generated in the LAPD device at UCLA. Using a series of novel diagnostics the following key quantities, **B, u**, Vp, n, Te have been measured at more than 48,000 spatial locations and 7,000 time steps. Every term in Ohm's law is also evaluated across and along the local magnetic field and the plasma resistivity derived and it is shown that Ohms law is non-local. The electron distribution function parallel and antiparallel to the background magnetic field was measured and found to be a drifting Kappa function. The Kubo AC conductivity at the flux rope rotation frequency, a 3X3 tensor, was evaluated using velocity correlations and will be presented. This yields meaningful results for the global resistivity. Frequency spectra and the presence of time domain structures may offer a clue to the enhanced resistivity.

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Walter Gekelman
Department of Physics, University of California, Los Angeles

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