

Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Is the Optical Sum Rule Violated in Cuprates?¹ MICHAEL NORMAN, Materials Science Division, Argonne National Lab, ANDREY CHUBUKOV, Dept. of Physics, University of Wisconsin, Madison, ERIK VAN HEUMEN, ALEXEY KUZMENKO, DIRK VAN DER MAREL, University of Geneva, Switzerland — Much attention has been given to a possible violation of the optical sum rule in the cuprates, and the connection this might have to kinetic energy lowering. The true optical integral is composed of a cut-off independent term (whose temperature dependence is a measure of the sum rule violation), plus a cut-off dependent term that accounts for the extension of the Drude peak beyond the upper bound of the integral. We find that optical data in the normal state of the cuprates can be accounted for solely by the latter term, implying that the dominant contribution to the observed sum rule ‘violation’ in the normal state is due to the finite cut-off.

¹Work supported by the DOE, Contract No. DE-AC02-06CH11357, NSF-DMR 0604406, the Swiss NSF and NCCR-MaNEP.

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Date submitted: 24 Nov 2007

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