Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

The metal to insulator transition in correlated materials – exchange of low and high energy spectral weight STEFAN G. SINGER, B. SCHULZ, I. MAHNS, M. BASTJAN, G. NEUBER, A. GOOS, P. SAICHU, S. BINDER, A. RUSYDI, K. HORN, S. ELLER, M. RÜBHAUSEN, University of Hamburg, G. STRYGANYUK, HASYLAB/DESY, L. COOPER, UIUC, G.A. SAWATZKY, UBC, O. SUSHKOV, University of New South Wales, H. EISAKI, Y. FUJIMAKI, S. UCHIDA, University of Tokyo, K. DÖRR, IWF — The electronic response of correlated system of manganites and cuprates was investigated by a combination of dc conductivity, ellipsometry, and VUV-reflectance covering an energy range from 0 to 22 eV. By performing a stabilized Kramer-Kronig transformation, we obtain the optical conductivity as a function of temperature around the metal to insulator transition. Our main findings are that changes in the kinetic energy exceed energies of more than 22 eV. Within this range we can establish, that high energy spectral weight gets transferred to low energies into the Drude region. We argue that our findings are general phenomena of correlated materials and outline different scenarios to explain our observations.

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Date submitted: 05 Feb 2008 Electronic form version 1.4