

Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Antiferromagnetic fluctuations in the metallic state of organic superconductor κ -(BEDT-TTF)₂Cu[N(CN)₂]Br observed by Raman scattering NATALIA DRICHKO, Dept of Physics and Astronomy, Johns Hopkins University, RUDI HACKL, Walther-Meissner-Institut, Garching, Germany, JOHN SCHLUETER, Argonne National Laboratory, NSF — Charge properties of the κ -(BEDT-TTF)₂Cu[N(CN)₂]X (X =Cl, Br) materials are well studied and are well explained within the approach of the Hubbard model, but magnetic properties leave some questions. In particular, the presence of anti-ferromagnetic (AF) fluctuations in the metallic state close to Mott Insulator κ -(BEDT-TTF)₂Cu[N(CN)₂]Br observed by NMR and other methods, but do not agree with the observed Fermi-liquid behavior. We study magnetic excitations in these materials by Raman scattering. In B_{1g} polarization at temperatures below 100 K we observe a band at 500 cm⁻¹, assigned to two-magnon excitations basing on results for AF-ordered Mott insulator κ -(BEDT-TTF)₂Cu[N(CN)₂]Cl. The band shows very similar intensity and position for the metallic κ -(BEDT-TTF)₂Cu[N(CN)₂]Br. We discuss this result in terms of two possible interpretations, AF fluctuations vs metal-AF insulator mixed phase close to the line of the first order phase transition between Mott Insulator and metallic states.

Natalia Drichko
Dept of Physics and Astronomy, Johns Hopkins University

Date submitted: 14 Nov 2014

Electronic form version 1.4