



## Bandwidth-controlled Mott transition in kappa-(BEDT-TTF)(2)Cu[N(CN)(2)]BrxC11-x: Optical studies of correlated carriers.

Submitted by Emmanuel Lemoine on Tue, 02/04/2014 - 16:13

Titre Bandwidth-controlled Mott transition in kappa-(BEDT-TTF)(2)Cu[N(CN)(2)]BrxC11-x: Optical studies of correlated carriers.

Type de publication Article de revue

Auteur Dumm, Michael [1], Faltermeier, Daniel [2], Drichko, Natalia [3], Dressel, Martin [4], Mézière, Cécile [5], Batail, Patrick [6]

Type Article scientifique dans une revue à comité de lecture

Année 2009

Langue Anglais

Date 2009/05/06

Numéro 19

Volume 79

Titre de la revue Physical Review B

Résumé en anglais

In the two-dimensional organic charge-transfer salts  $\kappa$ -(BEDT-TTF)<sub>2</sub>Cu[N(CN)<sub>2</sub>]Br<sub>x</sub>Cl<sub>1-x</sub> a systematic variation in the Br content from  $x=0$  to  $0.9$  allows us to tune the Mott transition by increasing the bandwidth. At temperatures below 50 K, an energy gap develops in the Cl-rich samples and grows to approximately  $1000 \text{ cm}^{-1}$  for  $T \rightarrow 0$ . With increasing Br concentration spectral weight shifts into the gap region and eventually fills it up completely. As the samples with  $x=0.73$ ,  $0.85$ , and  $0.9$  become metallic at low temperatures, a Drude-type response develops due to the coherent quasiparticles. Here, the quasiparticle scattering rate shows a  $\omega^2$  dependence and the effective mass of the carriers is enhanced in agreement with the predictions for a Fermi liquid. These typical signatures of strong electron-electron interactions are more pronounced for compositions close to the critical value  $x_c \approx 0.7$ , where the metal-to-insulator transition occurs.

URL de la notice <http://okina.univ-angers.fr/publications/ua1990> [7]

DOI 10.1103/PhysRevB.79.195106 [8]

Lien vers le document <http://dx.doi.org/10.1103/PhysRevB.79.195106> [8]

### Liens

[1] [http://okina.univ-angers.fr/publications?f\[author\]=2714](http://okina.univ-angers.fr/publications?f[author]=2714)

[2] [http://okina.univ-angers.fr/publications?f\[author\]=2715](http://okina.univ-angers.fr/publications?f[author]=2715)

[3] [http://okina.univ-angers.fr/publications?f\[author\]=2716](http://okina.univ-angers.fr/publications?f[author]=2716)

[4] [http://okina.univ-angers.fr/publications?f\[author\]=2717](http://okina.univ-angers.fr/publications?f[author]=2717)

[5] <http://okina.univ-angers.fr/cecile.meziere/publications>

[6] <http://okina.univ-angers.fr/patrick.batail/publications>

[7] <http://okina.univ-angers.fr/publications/ua1990>

[8] <http://dx.doi.org/10.1103/PhysRevB.79.195106>

Publié sur *Okina* (<http://okina.univ-angers.fr>)