Contribution ID: **454** Type: **Poster Presentation**

Metal Insulator Transition due to Density inhomogeneity at very low temperature and evidence for the correlated hopping mechanism in absence of magnetic field in p-GaAs

In this work, we present a study of the temperature and carriers density dependence of the electrical transport of high mobility two dimensional hole system grown on the (311) surface of GaAs. At low temperatures, the analysis of the variation of conductivity data shows that a density inhomogeneity in the metallic phase leading to percolation-type transition to an insulating state at a critical density. Secondly, we investigated the temperature dependence of resistivity in the absence of the magnetic field near the metal-insulator transition of a high mobility of holes system in two dimensions grown on the (311) surface GaAs. We provide evidence of correlated hopping by observing the low Coulomb energy TES and the concomitantly smaller than predicted CES in single electron hopping picture. Even in the presence of multi-electron hopping, single-particle scaling form is maintained. Hence,we use the scaling form to manifest the crossover between Coulomb hopping and screened Mott hopping

Primary author: Prof. HEMINE, Jamal (Université Hassan II – Mohammedia, Faculté des Sciences Ben M'sik, Avenue Colonel Driss El Harti, B.P.7955, Sidi Othman, Casablanca, Morocco)

Co-authors: Prof. EL KAAOUACHI, Abdelhamid (Faculty of sciebces, University Ibnou Zohr, Agadir, Morocco); Prof. EL IDRISSI, Hassan (Université Hassan II – Mohammedia, Faculté des Sciences Ben M'sik, Avenue Colonel Driss El Harti, B.P.7955, Sidi Othman, Casablanca, Morocco)

Presenters: Prof. EL KAAOUACHI, Abdelhamid (Faculty of sciebces, University Ibnou Zohr, Agadir, Morocco); Prof. HEMINE, Jamal (Université Hassan II – Mohammedia, Faculté des Sciences Ben M'sik, Avenue Colonel Driss El Harti, B.P.7955, Sidi Othman, Casablanca, Morocco)

Track Classification: ICMC-05 - Thin Films