Seminar 3: **Electrical conductivity of Dirac/Schrödinger hybrid electron systems at finite temperature**

We calculate the dielectric function of a system composed of a Bernal bilayer graphene (BLG) and an ordinary two-dimensional electron gas (2DEG), separated by a spacer, as a function of temperature *T*, interlayer distance *d* and spacer dielectric constant ε_2. Based on the results for dielectric function, we calculate the finite-temperature electrical conductivity of the first layer in presence of the second one due to the screened Coulomb scattering. We also compare our results with those of BLG-BLG, BLG systems and study the effect of 2DEG materials on the conductivity.

Seminar 4: **Charged impurity scattering in bilayer-graphene double layers**

We consider a double-layer system made of two parallel bilayer graphene sheets separated by a dielectric medium. We calculate the finite-temperature electrical conductivity of the first layer due to charged impurities located in two layers. We study the effects of temperature, interlayer distance, dielectric constants and impurity concentration, carrier concentration on the electrical conductivity. We show the importance of charged impurities located in layer II in determining electrical conductivity of the first layer for small interlayer distance. The results in this paper give us more understanding about the long-range charged impurity scattering in bilayer graphene under effect of the second one.