Prof. Adel Nader

Research Director and Head of the "*Condensed Matter Divison*" in the Atomic Energy Commission of Syria, Department of Physics

Tuesday Feb. 07, 14:00 Old Library K08

Resistivity determination as a mathematical problem

Resistance measurement is, probably, one of the simplest measurements in physics, though, a precise determination of the resistivity needs that a good expression of the measured resistance in function of different parameters, such as geometry, anisotropy and resistivity variations in space is known. Also, a method to extract the resistivity of the measured resistance should be given (solving the inverse problem).

This talk is about some progress done on the resistivity determination. Mainly, finding the resistance expressions for some complicated cases, such as a multilayered system touched by four points on its upper surface, reducing existing expressions to make them simpler to use, such as the expression of the transverse resistance of a layered conductor. And finally to show the limitations of some existing expressions when taking in account the contacts width, such as the case of an anisotropic disk measured by four points on its perimeter.

Thursday Feb. 09, 14:00 Old Library K08

Resistivity anisotropy of some layered dichalcogenides and its correlation with charge density wave transition.

The general formula of transition metal dichalcogenides is TX_2 , with T: Nb, Ta, Ti or V, X:S, Se. Their structure consists on three-layer packets, inside which the layers are ordered in the X-T-X sequence with covalent binding between them, whereas the packets are bound by weak Van der Waals coupling. Some of these compounds undergo a charge density wave (CDW) transition.

The resistivity anisotropy, precisely determined down to 14 K, of three of these compounds will be discussed ; 2H-$TaSe_2$ and 2H-$NbSe_2$ which show a slope change at the CDW transition, as well as the resistivity anisotropy of the enigmatic 1T-$TiSe_2$.