

ELECTRONIC AND MAGNETIC PROPERTIES OF QUANTUM MATERIALS AS SEEN BY X-RAY ELECTRON SPECTROSCOPIES

Giancarlo Panaccione

*Laboratorio TASC, Istituto Officina dei Materiali, Consiglio Nazionale delle Ricerche
Area Science Par, Basovizza (Trieste)*

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(short-link: <https://bit.ly/3wAnr9V>)

info: antonio.benedetto@uniroma3.it; armida.sodo@uniroma3.it

The role of X-ray based electron spectroscopies in determining chemical, electronic and magnetic properties of solids is well known since a few decades. Recently, the unprecedented boost of research on ‘less than 3D’ materials’ and ‘less than 2D’ interfaces, as part of the quantum materials research, made clear that the control of spin, charge and orbital degrees of freedom will be one of the pillars, both experimentally and theoretically, of the future solid state science. PhotoElectron Spectroscopy (PES) possesses all the necessary characteristics to explore, in a direct way, the electronic properties of solids and to reveal the complex relationship between charge, spin and orbit. Moreover, exploiting the variable depth sensitivity of PES by using the tuneability of Sychrotron Radiation may deepen our understanding of complex systems, spanning to extreme surface sensitivity to truly bulk one.

In this talk, recent Photoelectron Spectroscopy results obtained on magnetic topological insulators, transition metal dichalcogenides, and transition metal oxides will be presented, where the combination of angle, spin, time and depth-resolved experiments is able to reveal ‘hidden’ spectral features, connected to metallic and/or magnetic properties, as well as to underline the importance of dimensionality effects in quantum materials.



TEAMS extended link:

<https://teams.microsoft.com/l/meetup-join/19%3a8f9ec19800e7467ab9bae6e627dfcb21%40thread.tacv2/1648138330764?context=%7b%22Tid%22%3a%22ffb4df68-f464-458c-a546-00fb3af66f6a%22%2c%22Oid%22%3a%2234c00d0e-4085-4def-be95-f11f6239bc3d%22%7d>