



Invitation

LMU-Seminar

Title: Exploring Two-Dimensional Layered Materials Beyond Graphene
Speaker: Dr. Zurab Guguchia
Department of Physics, Columbia University, New York, USA

Time: Wednesday, April 11th 2018, 10:15

Place: WBGB/021

Abstract:

Transition metal dichalcogenides (TMDs), a family of 2D layered materials like graphene, have been subject to tremendous experimental and theoretical studies not only due to their exciting physical properties but also as systems that may solve critical technological problems. I will describe a few TMD systems with novel electronic properties, where the application of hydrostatic pressure and uniaxial strain lead to large and unexpected effects. These include the Weyl semimetal T_d -MoTe₂ (where a strong pressure effect on superfluid density, its linear scaling with T_c , as well as a possible sign changing s^+ gap were observed), metallic NbSe₂ (where a large negative uniaxial strain effect on T_c with a plateau region around zero strain is observed) and semiconducting 2H-MoTe₂ (where we provide the first evidence for involvement of magnetic ordering in the physics of TMDs). I will discuss these results from an experimental perspective using a combination of muon-spin rotation, X-ray/Neutron powder diffraction, transport and atomic-resolution scanning tunneling microscopy techniques.

[1] Z. Guguchia et. al., Nature Communications 8, 1082 (2017).

[2] Z. Guguchia et. al., arXiv:1711.05392v2 (2017).