FACOLTÀ DI SCIENZE MATEMATICHE, FISICHE E NATURALI
DIPARTIMENTO DI MATEMATICA E FISICA "NICCOLÒ TARTAGLIA"
INTERNATIONAL DOCTORAL PROGRAM IN SCIENCE

Spin- and time resolved ARPES studies of transition metal dichalcogenides

Introduce:
Dott. Claudio Giannetti
Università Cattolica del Sacro Cuore

Interviene:
Dott. Elia RAZZOLI, University of British Columbia, Vancouver, Canada

Abstract
Transition metal dichalcogenides display a plethora of interesting properties from coupled spin and valley physics in the semiconducting 2H structure to type II Weyls fermions in the non-centrosymmetric 1T' structure. Here we will firstly show how spin- and angle-resolved photoemission spectroscopy provide evidence for a large spin polarization P in the bulk of centrosymmetric MoS2, and how this can be reversed by changing the handedness of the incident circularly polarized light. Our calculations show that the valley and layer-locked spin-polarized electronic states can be selectively accesses by circularly polarized light, therefore providing a novel route to probe spin-polarized states in inversion-symmetric systems [1]. Secondly, we will present a pump-probe time-resolved ARPES study of the relaxation dynamics in the candidate type II Weyl-semimetal WTe2. We identify fast and slow components in the electron relaxation dynamics, which display a strong dependence on both the electron momentum k and temperature. The interplay between the temperature evolution of this dynamics, details of the electronic band structure, and putative Weyl quasiparticle behavior, will be discussed.

Seminario

Giovedì 4 maggio 2017
Sala Riunioni, ore 15.00
Via dei Musei 41 - Brescia

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