

平成28年9月26日

応用物理学会北海道支部講演会のお知らせ

演題 : Electronic phase transitions through time - on a femtosecond timescale

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(Professor, Jozef Stefan institute)

日時 : 平成28年10月25日 (火) 16:30~18:00

場所 : 北海道大学 工学部 アカデミックラウンジ3

共催 : 応用物理学会北海道支部 (共催団体 : 物理学会北海道支部、エンレイソウの会)

講演の要旨

The study of phase transitions in real time under nonequilibrium conditions is of fundamental interest in many areas of physics. A special category of recent fundamental and practical interest are transitions to metastable hidden states which occur under conditions of particle-hole asymmetry. While such behavior has been invoked in cosmology to explain Baryogenesis, it is not commonly observed elsewhere. In the quasi-two-dimensional dichalcogenide, 1T-TaS<sub>2</sub>, conditions for the formation of an electronically textured hidden “false vacuum” state are created by femtosecond laser photoexcitation. Femtosecond photoexcited low temperature scanning tunneling microscopy reveals a remarkable quantum duality of polaron behavior with a vivid real-space illustration of Mott physics. The current system is of practical interest for ultrafast low-energy low-temperature non-volatile memory devices with applications in cryogenic computing.

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