

645th ASRC Seminar

Date: 1:30 ~ 2:30 Thursday, August 4

Location: Room 115, KEK Tokai Building No.1

Speaker: Dr. Johann Heuser

(GSI Helmholtz Centre for Heavy Ion Research)

Title: The CBM experiment at FAIR and its Silicon Tracking System: Physics case, Experimental approach, Status of development

Abstract: The Coulomb interaction (CI) among graphene Dirac fermions is unscreened around the isotropic Dirac points, causing a logarithmic velocity renormalization and a Dirac cone reshaping. In less symmetric Dirac materials with anisotropic cones and tilted axes, the CI can provide still more exotic phenomena which have not been experimentally unveiled yet. In this talk, I will present NMR evidence for a non-uniform cone reshaping accompanied by a bandwidth reduction and an emergent ferrimagnetism in tilted Dirac cones that appear on the verge of charge ordering in an organic compound. Theoretical analyses based on the renormalization-group approach and the Hubbard model show that these observations are the direct consequences of the long-range and short-range parts of the CI, respectively. The cone reshaping and the bandwidth renormalization, as well as the novel magnetism revealed here, can be ubiquitous and vital for many Dirac materials.

なお、今回のセミナーは、第52回「原子核ハドロン物理セミナー」を兼ねております。セミナー内容は

http://silver.j-parc.jp/hadron/hadron_seminar/index.htmlでご覧になれます。

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