

凝縮系物理学インフォーマルセミナー Condensed Matter Seminar

Location: Room 115, School of Science Bldg. 5 (理学5号館115号室)

Time and date: 16:00 – 17:30, Tuesday, 19 May 2015

Topological edge states in **"mechanical" graphene**

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Abstract:

A spring-mass model on the honeycomb lattice, "mechanical graphene", is investigated focusing on Dirac cones in the frequency spectrum. The frequency spectrum shows a dramatic change, creation and annihilation of Dirac cones, as we modify tension of springs at equilibrium. If we rotate the system to break the time reversal symmetry, a gap is induced at the Dirac point, and the system becomes topologically nontrivial. Then, we observe "chiral edge modes" in mechanical system. Importance of the boundary condition to observe edge states is discussed in connection to the symmetry protection of the topological states.