

物理学教室 物性コロキウム

日時：2015年9月28日（月）15:00-16:00

場所：理学合同B棟 745号室（745, Science complex B）

講師：Max LEIN 氏（AIMR、東北大学）

題目：Classification of Topological Insulators for Classical Light

要旨：Recently, topological insulators were experimentally realized with classical light in a number of spectacular experiments. In analogy to similar phenomena from solid state physics, unidirectional, backscattering-free edge currents were observed in periodic light conductors such as photonic versions of graphene. My research aims at providing a first principles explanation of such dynamical and topological effects in “photonic topological insulators” (PTIs); Of particular interest are “photonic bulk-edge correspondences”. As a first step, we give an exhaustive classification of PTIs for the first time. In order to be able to apply the Cartan-Altdand-Zirnbauer classification scheme of topological insulators to electromagnetism it is necessary to recast the Maxwell equations as a “Schrödinger-type equation”. It turns out that periodic light conductors made up of ordinary materials (such as silica) are of class BDI, meaning they resemble topological superconductors rather than analogous quantum systems from solid state physics. Consequently, existing derivations of, say, bulk-edge correspondences from solid state physics do not automatically apply to PTIs. Lastly, I will explain the ramifications this has for picking suitable effective tight-binding models. This work is a collaboration with Giuseppe De Nittis.

連絡先 石原照也（795-6420）

* 当日 Lein 氏 (<http://maxlein.com/about/>) と直接議論の時間を持ちたい方はあらかじめ石原までご連絡ください。

☆ 14:45 よりコーヒー、紅茶、お菓子を用意します。カップを持ってお集まり下さい。

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