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Entanglement Chern Number in Tree Dimensions[1] HIROMU ARAKI, University of Tsukuba, TAKAHIRO FUKUI, Ibaraki University, YASUHIRO HATSUGAI, University of Tsukuba — We have characterized some of topological phases by the entanglement Chern number (e-Ch), which is defined as the Chern number of the entanglement Hamiltonian.[2] The partition of the system is not necessarily spatial but can be spin partition, which is the extensive partition. If a system respects the time reversal symmetry, the Chern number is trivial but the e-Ch can be non-zero. For instance, the e-Ch characterizes the quantum spin Hall phase of the Kane–Mele model and its phase diagram by the Z_2 topological number is successfully reproduced by the e-Ch.[3] For the Fu–Kane–Mele model,[4] its weak phases are well described by the non trivial section e-Ch and the strong phase is characterized by the existence of the Weyl points of the entanglement Hamiltonian.[5]

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Hiromu Araki
University of Tsukuba

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