

Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Chernful excitations in two-dimensional quantum magnets JUDIT

ROMHANYI, Okinawa Institute of Science and Technology Graduate University
— We discuss topological excitations in two-dimensional frustrated quantum spin models. In particular, we study systems in which the elementary magnetic building blocks are made of two or more spins $S = 1/2$. The ground state in these models is formed by quantum mechanically entangled dimers and plaquettes, allowing for larger local Hilbert spaces and the emergence of multiplet excitations. We explain i) how perturbations to the models are able to open a gap in the bands of excited multiplet and ii) how relativistic spin-orbit coupling renders these bands topological in nature, resulting in unconventional Chern numbers. We will touch on possible experimental realization of these topological models.

Judit Romhanyi
Okinawa Institute of Science and Technology Graduate University

Date submitted: 11 Nov 2016

Electronic form version 1.4