Hamburg Photon Science Colloquium

TRIPLON TOPOLOGY AND TRIPLON LIQUID IN EXCITONIC MAGNETS

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The combination of strong spin-orbit coupling and correlations, e.g. in ruthenates and iridates, has been proposed as a means to realize quantum materials with non-trivial topological properties, e.g., Kitaev's spin liquid in materials with a honeycomb lattice and one hole in the t_{2g} subshell of *4d* or *5d* states. We discuss here two holes in the t_{2g} subshell, where onsite spin-orbit coupling favors a local singlet ground state. We investigate excitations into a low-lying triplet, triplons, and find them to aquire non-trivial band topology in large parts of the parameter space. We also comment on the magnetic states resulting from triplon condesation where we find a triplon liquid taking the parameter space of Kitaev's spin liquid.

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2:00 PM

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SEMINAR ROOMS I-III