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Topological and magnetic phases in the honeycomb Iridates
STEPHAN RACHEL, TU Dresden, Institute of Theoretical Physics — Iridates are amongst the most interesting complex oxide materials. The non-interacting band structure of the honeycomb Iridates has been claimed to feature the quantum spin Hall effect due to large spin orbit coupling. The true materials exhibit considerable Coulomb interactions leading to different types of magnetic order (e.g., zig-zag or spiral order). Here we show how one can obtain such magnetic phases by combining topological band structure and local Coulomb interactions into a topological Hubbard model which we analyze in detail.

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