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## Gross-Neveu $SO(3)$ criticality in spin-orbital liquids: FRG vs higher-order perturbation theory

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The Gross-Neveu  $SO(3)$  universality class in three spacetime dimensions describes a quantum critical point between a Dirac semimetal and a long-range-ordered phase in which the fermion spectrum is only partially gapped out. Such a quantum critical point has recently been predicted to be realizable in two-dimensional spin-orbital magnets with strong exchange frustration. Here, I shall report on our efforts to characterize the quantum critical behaviour of the Gross-Neveu- $SO(3)$  universality class using the functional renormalization group in the improved local potential approximation, and compare with our three-loop and second-order large- $N$  results. Time permitting, I shall also discuss some of the qualitative behaviour for general spacetime dimension and flavour number, which shows some distinctive features that are absent in the corresponding Gross-Neveu-Ising and -Heisenberg incarnations.

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