Exotic Structure, Exotic Ground States?

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In the thirty-seven years since the discovery of quasicrystals by Dan Shechtman there has been tremendous progress in our understanding of the structure of quasicrystals, and we have seen a surge of activity and new results regarding the electronic, magnetic, optical and thermal properties of these systems. During this same period, there have been major advances in our understanding of exotic ground states in conventional periodic crystalline materials, including both conventional and unconventional superconductivity, heavy fermion physics and the nature of magnetic frustration. Here, I will review and attempt to make some connections between quasicrystalsand exotic ground states that have been reported, and identify issues for future investigations that may shed light on the role of aperiodicity in shaping physical properties

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