

## **Quantum spin states in low dimensions and complex geometries**

Quantum effects become important when the space dimensionality is decreased. I will discuss the ground states of quantum spin models in two dimensions and for lattice configurations that increase in complexity from the simple known Archimedean lattices to quasiperiodic tilings such as the Penrose tiling. The consequences of geometrical disorder on the spatial ordering and on the excitation spectrum will be discussed. Recent work on Kagome lattice antiferromagnets tends to show that magnetic frustration and large classical degeneracy can lead to a new type of disordered "spin liquid" phase. This possibility will be considered for the case of complex spin systems which may soon be possible to realize via atomic deposition on surfaces of quasicrystals.