

Low-dimensional quantum spin systems display intriguing ground state properties, which may have important consequences for the existence of fractionalized excitations or the emergence of high-temperature superconductivity. In this talk we consider the material in two dimensions which they can be good candidates of existence spin liquid phases. Among various materials that show promising lowtemperature behaviors, the family of organic charge transfer salts κ -(ET)₂X (with the anisotropic triangular lattice) represent a very important candidate for hosting spin liquid properties. So we study these compounds with this approach: Quantum variational Monte Carlo for transfer salts. By using variational wave functions and quantum Monte Carlo techniques, we investigate the complete phase diagram of distorted Heisenberg model on the triangular lattice. Distortion is introduced as an inequality of one nearest neighbor coupling with the other two where two out of three bonds have super exchange couplings J and the third one has instead J' . This model interpolates between the square lattice and the isotropic triangular one, for $J'/J \leq 1$, and between the isotropic triangular lattice and a set of decoupled chains, for $J/J' \leq 1$. We consider all the fully symmetric spin liquids that can be constructed with the fermionic projective-symmetry group classification (Zho and Wen, arXiv:cond-mat/0210662) and we compare them with the spiral magnetic orders that can be accommodated on finite clusters. Our results show that, for $J'/J \leq 1$, the phase diagram is dominated by magnetic orderings, even though a spin-liquid state may be possible in a small parameter window, i.e., $0.7 < J'/J < 0.8$. In contrast, for $J/J' \leq 1$, a large spin liquid region appears close to the limit of decoupled chains, i.e., for $J/J' < 0.6$, while magnetically ordered phases with spiral order are stabilized close to the isotropic point.