

$SU(N)$ symmetric Heisenberg models on the honeycomb lattice

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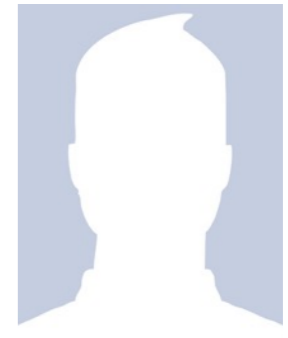
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Pierre Nataf

SU(N) symmetric Heisenberg model

N local states (or color)
on each site



$$\mathcal{H} = \sum_{i,j} \mathcal{P}_{i,j} \quad \mathcal{P}_{i,j} \text{ exchange operator}$$

$$\mathcal{P}_{i,j} \left| \begin{array}{c} \bullet \\ i \end{array} \text{---} \begin{array}{c} \bullet \\ j \end{array} \right\rangle \rightarrow \left| \begin{array}{c} \bullet \\ i \end{array} \text{---} \begin{array}{c} \bullet \\ j \end{array} \right\rangle$$

$$\mathcal{P}_{ij} |\beta_i \alpha_j\rangle = |\alpha_i \beta_j\rangle$$

Extract

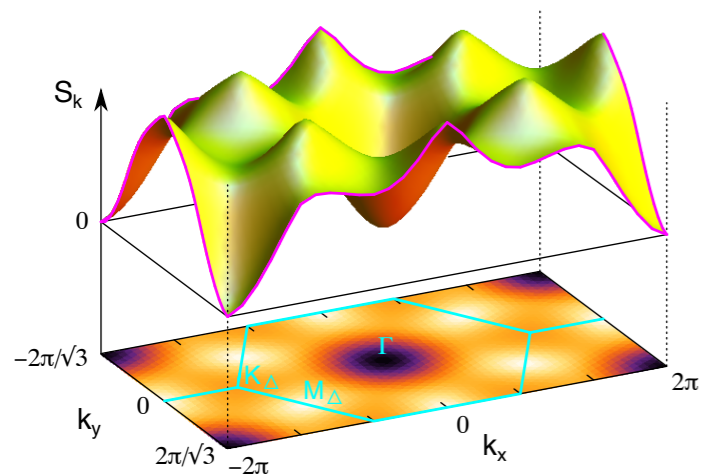
“Monte Carlo study of
variational Gutzwiller projected
free fermion Fermi sea states”

You can learn about

- ☑ Gutzwiller projection,
- ☑ the variational states,
- ☑ the MC algorithm,
- ☑ SU(3), SU(4), SU(6) models,
- ☑ comparison to other methods

SU(4)

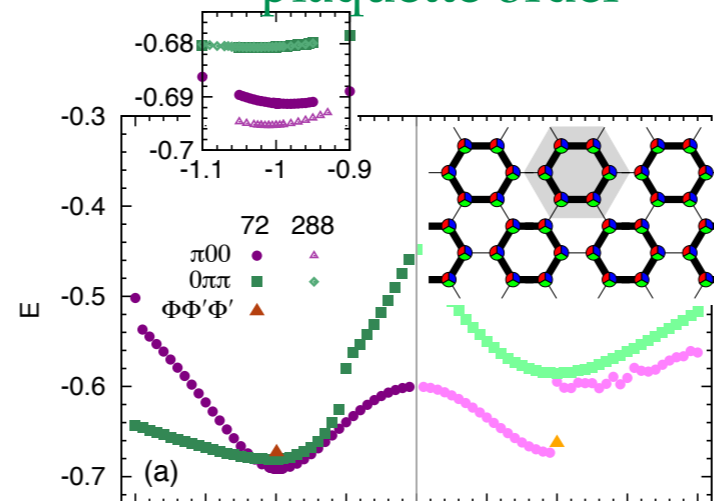
algebraic spin-orbital liquid



PRX 2, 041013 (2012)

SU(3)

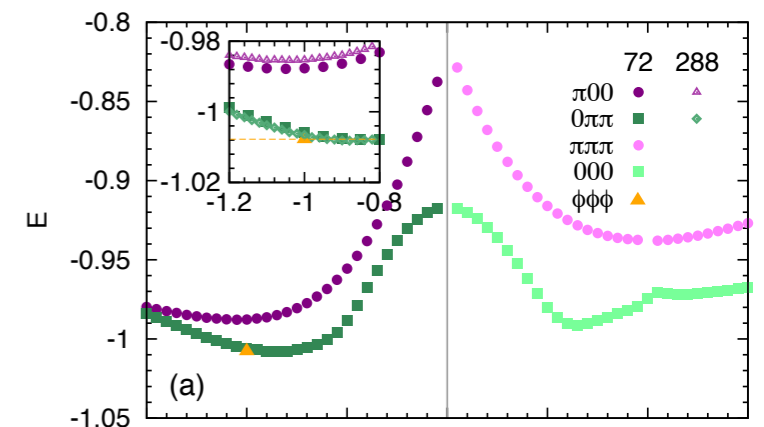
plaquette order



PRB 87, 195113 (2013)

SU(6)

chiral liquid or
plaquette order?



ongoing project

Details at poster No. 5

Thank you for your attention