

## **Anisotropic honeycomb lattice in the Hubbard**

**Guangquan Wang**

National University of Singapore – (Singapore)

We explore the phase diagram of an anisotropic honeycomb lattice within the framework of the Hubbard Model. Other than the usual semi-metal, band-insulator and anti-ferromagnet, a new spin-liquid phase is identified, which can be understood in terms of strongly dimerized states. In the isotropic limit, in contrast to a recent Quantum Monte Carlo calculation, in addition to a gapped spin liquid, a gapless one is also found, which could possibly be eliminated by considering different dimer covering schemes.