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Deconfined quantum criticality beyond designer Hamiltonians THOMAS C. LANG, University of Innsbruck, RIBHU K. KAUL, University of Kentucky — The SU(6) symmetric generalization of the Hubbard model on the square lattice provides the simplest microscopic realization of the quantum phase transition from a Néel to a valence bond solid (VBS) ordered phase. By constructing dimensionless quantities such as ratios of the magnetic structure factor and valence bond correlations we are able to unambiguously determine the existence of weak, but robust antiferromagnetic order in the weak coupling regime and a plaquette VBS in the strong coupling limit. Furthermore these ratios provide a tool to accurately determine the (critical) point from both sides of the phase transition separating the two limits. Preliminary results suggest a direct continuous transition for which we extract estimates for the critical exponents and compare the scaling function with the SU(6) *designer* spin-models to investigate whether this quantum phase transition is compatible with the scenario of deconfined quantum criticality.

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