Multicanonical Monte Carlo simulations of anisotropic SU(3) and SU(4) Heisenberg models KENJI HARADA, Kyoto University, NAOKI KAWASHIMA, ISSP, University of Tokyo, MATTHIAS TROYER, ETH, Zurich — We present the results of multicanonical Monte Carlo simulations on two-dimensional anisotropic SU(3) and SU(4) Heisenberg models. In our previous study [K. Harada, et al., J. Phys. Soc. Jpn. **76**, 013703 (2007)], we found evidence for a direct quantum phase transition from the valence-bond-solid(VBS) phase to the SU(3) symmetry breaking phase on the SU(3) model and we proposed the possibility of deconfined critical phenomena (DCP) [T. Senthil, et al., Science **303**, 1490 (2004); T. Grover and T. Senthil, Phys. Rev. Lett. **98**, 247202 (2007)]. Here we will present new results with an improved algorithm, using a multicanonical Monte Carlo algorithm. Using a flow method-like technique [A.B. Kuklov, et al., Annals of Physics **321**, 1602 (2006)], we discuss the possibility of DCP in both models.

Kenji Harada
Kyoto University

Date submitted: 21 Nov 2008   Electronic form version 1.4