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Critical nonequilibrium relaxation in cluster algorithms using the Binder ratio and its application to bond-diluted Ising models[1] YOSHIHIKO NONOMURA, MANA, National Institute for Materials Science, YUSUKE TOMITA, College of Engineering, Shibaura Institute of Technology — Recently we showed that the critical nonequilibrium relaxation in cluster algorithms is widely described by the stretched-exponential relaxation [1-3]. Explicitly, the absolute value of magnetization at the critical temperature T_c behaves as $\langle |m| \rangle \sim \exp(+c_m t^\sigma)$ from the perfectly-disordered state. In the present talk we apply this scheme to the bond-diluted Ising models and show that the exponent σ increases continuously and monotonously as the bond density p decreases. Although naïve fitting of physical quantities becomes difficult as p approaches the percolation threshold p_c, we find that the Binder ratio has no such a problem even in the vicinity of p_c. While the Binder ratio is almost independent of system sizes at T_c both at the onset of relaxation and near equilibrium, the exponent σ can be estimated accurately by an empirical logarithmic scaling for the size dependence in the intermediate simulation-time region.

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