Measurement of dynamic critical exponents in strongly correlated systems[1] JI-WOO LEE, YONG CHUL LEE, TAE YOUNG PARK, Myongji University — We propose a method of obtaining dynamic critical exponents by measuring the gap between the ground-state energy and the first-excited state energy. The finite-size scaling of the gap produces the dynamic critical exponent directly. For one-dimensional hardcore boson Hubbard model at half-filling, we applied our method to obtain $z = 0.975 \pm 0.002$. For one-dimensional spinless fermion model, we obtained $z = 0.95 \pm 0.02$. The ground-state energy is obtained by modified Lanczos method and the excited spectrum is obtained by Grosso's method. We expect our method can be very useful in obtaining dynamic critical exponent without using two-parameter finite-size scaling of order parameters such as superfluid density. Application to other models is also presented.

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