

Abstract Submitted  
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**Direct calculation of correlation length based on quasi-cumulant method**<sup>1</sup> NOBORU FUKUSHIMA, None — We formulate a method of directly obtaining a correlation length without full calculation of correlation functions, as a high-temperature series. The method is based on the quasi-cumulant method, which was formulated by the author in J. Stat. Phys. 111, 1049-1090 (2003) as a complementary method for the high-temperature series expansion originally for an  $SU(n)$  Heisenberg model, but is applicable to general spin models according to our recent reformulation. A correlation function divided by its lowest-order nonzero contribution has properties very similar to a generating function of some kind of moments, which we call quasi-moments. Their corresponding quasi-cumulants can be also derived, whose generating function is related to the correlation length. In addition, applications to other numerical methods such as the quantum Monte Carlo method are also discussed.

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Noboru Fukushima  
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