Statistical Average of Spin Operators for Calculation of Three-Component Magnetization (II): Solution of Equation

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Abstract: In this paper, the solution of Chebyshev equation with its argument being greater than 1 is obtained. The initial value of the derivative of the solution is the expression of magnetization, which is valid for any spin quantum number S. The Chebyshev equation is transformed from an ordinary differential equation obtained when we dealt with Heisenberg model, in order to calculate all three components of magnetization, by many-body Green's function under random phase approximation. The Chebyshev functions with argument being greater than 1 are discussed. This paper shows that the Chebyshev polynomials with their argument being greater than 1 have their physical application.

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