

## Dynamic susceptibility for a spin-1 Ising model using the path probability method

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The nonlinear rate equations based on the path probability method is used to derive the dynamic (or complex) susceptibility ( $\chi$ ) for a spin-1 Ising model with bilinear and biquadratic interactions when the external magnetic field exists. Firstly, the rate equations are linearized. Then, these are solved in the presence of an oscillating external magnetic field. From the real and imaginary parts of  $\chi$ , the magnetic dispersion and absorption factors are found. Temperature dependence of these quantities in the ferromagnetic and paramagnetic phase regions (as well as their critical properties) are presented. Finally, the theoretical results are compared with those obtained using irreversible thermodynamics.

**Keywords:** Spin-1 Ising model, Dynamic susceptibility, Path probability method.