Longitudinal and transverse components of the complex magnetic susceptibility tensor of superparamagnetic particles with triaxial anisotropy[1] YURI KALMYKOV, BACHIR OUARI, Lab. Mathématiques et Physique des Systèmes, Université de Perpignan, 52, Avenue Paul Alduy, 66860 Perpignan Cedex, France, WILLIAM COFFEY, Department of Electronic and Electrical Engineering, Trinity College, Dublin 2, Ireland — The longitudinal and transverse components of the complex magnetic susceptibility tensor of single domain ferromagnetic particles with triaxial (orthorhombic) anisotropy are calculated by averaging the Gilbert-Langevin equation for the magnetization of an individual particle and by reducing the problem to that of solving a system of linear differential-recurrence relations for the appropriate equilibrium correlation functions. The solution of this system is obtained in terms of matrix continued fractions. Simple analytic equations, which allow one to understand the qualitative behavior of the system and to accurately predict the spectrum of the longitudinal and transverse complex susceptibilities in wide ranges of the barrier height and dissipation parameters, are proposed.

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