Precession aided magnetic stochastic resonance in ferromagnetic nanoparticles with cubic anisotropy\textsuperscript{1} WILLIAM COFFEY, Department of Electronic and Electrical Engineering, Trinity College, Dublin 2, Ireland, YURI KALMYKOV, Lab. Mathématiques et Physique des Systèmes, Université de Perpignan, 52, Avenue Paul Alduy, 66860 Perpignan Cedex, France, YURI RAIKHER, Institute of Continuous Media Mechanics, Ural Branch of RAS, 614013, Perm, Russia, SERGEY TITOV, Institute of Radio Engineering and Electronics of RAS, 1, Vvedenskii Sq., 141190 Fryazino, Russia — It is shown that the signal-to-noise ratio (SNR) in the magnetic stochastic resonance of single-domain ferromagnetic nanoparticles having cubic anisotropy exhibits a strong intrinsic dependence on the decay rate $\alpha$ of the Larmor precession. This dependence (precession aided relaxation) is due to coupling between longitudinal relaxation and transverse (precessional) modes arising from the lack of axial symmetry. It is most pronounced in the intermediate to low damping (Kramers turnover) region $0.1 < \alpha < 1$. The effect which does not exist for axially symmetric potentials may be used to determine $\alpha$.

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