

## RELAXATION AT NONLINEAR FERROMAGNETIC RESONANCE

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### S u m m a r y

Nonlinear ferromagnetic resonance in yttrium iron garnet films have been studied both experimentally and theoretically. It is shown that the application of Landau–Lifshitz equation with a relaxation term in the Gilbert form brings about a qualitatively incorrect result in the determination of the Q-factor for a magnetostatic microwave resonator, because the theory predicts a growth of the Q-factor, when the pump signal power increases to a critical value, above which the foldover phenomenon occurs. When using a modified relaxation term in the form of a power series in the time derivative of the magnetization, the results of calculations coincide with experimental ones to a sufficient accuracy. The nonlinearity term (coefficient) in the equation for the uniform precession is shown to depend on the fields of uniaxial anisotropy of the first and second orders. This fact can be used to affect the characteristics of nonlinear processes in ferromagnets.