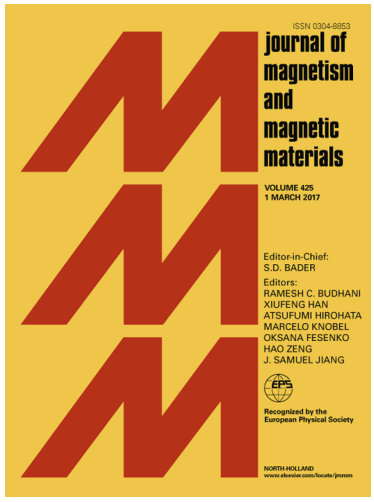

Faraday Diamagnetism under Slowly Oscillating Magnetic Fields

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Abstract: Diamagnetism is a universal phenomenon of materials arising from the orbital motion of electrons bound to atoms, which is commonly known as Langevin diamagnetism. The orbital motion also occurs according to the Faraday's law of induction when the applied magnetic field is oscillating. However, the influence of this dynamic effect on the magnetism of materials has seldom been studied. Here, we propose a new type diamagnetism coined Faraday diamagnetism. The magnitude of this diamagnetism evaluated by an atomic electric circuit model was as large as that of Langevin diamagnetism. The predicted scale of Faraday diamagnetism was supported by experiments.