

Abstract Submitted
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Resonance of a Metal Drop under the Effect of Amplitude-Modulated High Frequency Magnetic Field¹ JIAHONG GUO, Shanghai Institute of Applied Mathematics and Mechanics, Shanghai University, Shanghai, China, ZUOSHENG LEI, Shanghai Key Laboratory of Modern Metallurgy Material Processing, Shanghai University, Shanghai, China, HONGDA ZHU, Shanghai Institute of Applied Mathematics and Mechanics, Shanghai University, Shanghai, China, LIJIE ZHANG, Shanghai Key Laboratory of Modern Metallurgy Material Processing, Shanghai University, Shanghai, China, MAGNETIC HYDRODYNAMICS(SIAMM) TEAM, MAGNETIC MECHANICS AND ENGINEERING(SMSE) TEAM — The resonance of a sessile and a levitated drop under the effect of high frequency amplitude-modulated magnetic field (AMMF) is investigated experimentally and numerically. It is a new method to excite resonance of a metal drop, which is different from the case in the presence of a low-frequency magnetic field. The transient contour of the drop is obtained in the experiment and the simulation. The numerical results agree with the experimental results fairly well. At a given frequency and magnetic flux density of the high frequency AMMF, the edge deformations of the drop with an azimuthal wave numbers were excited. A stability diagram of the shape oscillation of the drop and its resonance frequency spectrum are obtained by analysis of the experimental and the numerical data. The results show that the resonance of the drop has a typical character of parametric resonance.

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