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Modeling of Magneto-Mechanical Damping in Ferromagnetic Alloys: a Brief Review

V.V. Kaminskii, D.A. Kalganov

Institute of Advanced Data Transfer Systems, ITMO University, Kronverkskiy pr. 49, St. Petersburg 197101, Russia

Received: December 20, 2022 Corresponding author: V.V. Kaminskii

Abstract. This review is devoted to the analysis of three components of magneto-mechanical damping (MMD), namely, macroeddy, microeddy, and hysteresis components, in ferromagnetic alloys. Theoretical models and equations for all three components of the MMD are discussed. The application of the classical theory of micro- and macroeddy MMD to determine the influence of the frequency of cyclic external mechanical load on the damping ability of the material is shown. A discussion on the role of various factors, such as temperature, strain amplitude, vibration frequency, and external magnetic field, on the magnitude of the MMD is provided.

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