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Fault Diagnosis Based on Enhancement of Barkhausen Noise Using Hybrid Method Emprical Mode Decomposition-Savitzky-Golay Filter

The barkhausen noise carries important information which can be used in early damage detection and fault diagnosis. The barkhausen noise is corrupted by interference signals from other sources during the measure and the information of fault can be lost. In this paper a new algorithm based on Empirical Mode Decomposition (EMD) and Savitzky-Golay is proposed to extract the information about the fault of materials from a measured barkhausen noise. Firstly, using EMD to decompose the barkhausen noise signal into elementary function called Intrinsic Mode Function (IMF). Secondly, we use the energy to select the relevant mode, these selected IMF is filtered by Savitzky-Golay filter and the reconstructed signal is obtained by the IMFs filtered. The envelope spectra are used to test the efficiency of the proposed method in enhancement the quality of barkhausen noise signal.

Topic

1. Nanomagnetism and Spintronics

Summary

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