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Influencing Factors and Error Analysis of Pulse Current Measurement With Air-core Rogowski Coil

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The error of an air-core Rogowski coil caused by eccentricity or tilting of the conductor flowing through the measured current and interference magnetic field outside the area is analyzed under uniform and uneven coiling conditions. The error which is a function of the density of the windings along the bobbin is given. In the aspect of extraction of distribution parameters, a method combining finite element simulation modeling and data fitting is proposed, which solves the problem of extracting the inter-turn capacitance of a Rogowski coil. Under high frequency conditions, the influence of the current of gap on shielding container on the measurement results is discussed. The function of the error caused by the current of shielding container is derived, and factors that affect the error are given.

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