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خلاصه مقاله:

This paper presents a new method for proper modeling of time domain multi-ports grounding systems that can be implemented in transient state-of-the-art analysis software. The presented method aims in minimizing the approximation in the frequency modeling of grounding systems in the transient analysis of power systems. The proposed solution is divided into three stages: First, the use of an electromagnetic method for solving the Maxwell equations, which leads to the extraction of the impedance matrix of the grounding system in a desired frequency range. In the next step, a logical approximation of the impedance matrix was made using the Vector Fitting (VF) method. The used VF method has led to the fitting of a set of poles for all impedance matrix arrays. In the final stage, considering that all the transient soft wares analyze power systems based on the admittance matrix, the proper model of the time domain multi-ports grounding system is executed by state space equations. The proposed modeling is performed on a typical 132 kV transmission line, and performance of implemented grounding system is compared with the previous methods including admittance matrix modeling and conventional model based on simple linear resistances.

کلمات کلیدی:

multiport grounding system, impedance modeling, vector fitting

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