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COMPUTATION OF VERY FAST TRANSIENT OVERVOLTAGES IN TRANSFORMER WINDINGS

ABSTRACT

The paper deals with the computation of very fast transient overvoltages (VFTO) in transformer windings. For this purpose an algorithm is developed. The applied algorithm uses a hybrid model which is a combination of the Multi-Conductor Transmission Line Model (MTLM) and the Single-Transmission Line Model (STLM). By means of the STLM, the voltages at the end of each coil are calculated. Then, these values are used in the MTLM to determine the distributed overvoltages along the turns. Also, this method significantly reduces the number of linear equations that needs to be solved for each frequency to determine the required voltages in frequency domain.

The algorithm uses a modified continuous Fourier transformation that provides an accurate time domain computation. As an example, the inter-turn voltage distributions for two 500 kV auto-transformers are computed and compared with measurements provided by other publications. characteristics.

Keywords: fast transients, modified Fourier transformation, overvoltages, switching surges, transformer.