A NOVEL NON-SYNCHRONOUS SAMPLING METHOD FOR HARMONIC/INTERHARMONIC MEASUREMENT IN POWER SYSTEMS

JINGWEN YU, HUI XUE, BOYING WEN
College of Information & Electrical Engineering
China Agricultural University
Beijing, 100083, P. R. China

ABSTRACT—A novel non-synchronous sampling method for harmonic/interharmonic measurement in power system is proposed. The method consists of two main steps. In the first step, the leakage effect of DFT is reduced through transforms on the consecutive points of DFT. In the second step, the amplitude, frequency and phase angle of the harmonics are calculated through the corresponding interpolation methods. Compared to the commonly used windowed DFT method, the proposed method does not need the construction and storage of window functions. Therefore, it simplifies the implementation and improves the precision of harmonic measurement. The performance of the novel method is compared with DFT interpolation methods and windowed DFT interpolation method through simulation experiments.

Key Words: Harmonic analysis, discrete Fourier transforms, frequency domain analysis