Abstracts

Why the DFT is Faster Than the FFT for FDTD Time-to-Frequency Domain Conversions

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Although it is a time-domain method, the finite-difference time-domain (FDTD) method has been used extensively for calculating frequency domain parameters such as specific absorption rate, radar cross-section, and S-parameters. When a broad frequency band is of interest, using a broad-band pulsed excitation can provide this frequency response with a single FDTD simulation. The frequency domain data can be calculated from the time domain data using either a discrete Fourier transform (DFT) or a fast Fourier transform (FFT). This letter examines both methods and analyzes why the DFT is generally more efficient and easier to use than the FFT for FDTD time-to-frequency domain conversions.

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