APPLICATION OF THE MULTI-TEMPORAL RESOLUTION ENHANCED TIME-DOMAIN METHOD OF MOMENTS TO CALCULATE THE RADIATION PROPERTIES OF THIN WIRE ANTENNAS

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In order to achieve a high accuracy in the application of the time-domain method of moments the time step size is usually chosen much smaller than the time step size given by the Nyquist criterion. In this paper we present a multi-temporal resolution enhanced time-domain method of moments which taylors the time step size according to the distance between source and observation point. Using this strategy the fields emitted by nearby sources are calculated with high accuracy and the fields emitted by far away sources are calculated with lower – but still adequate – accuracy. Additionally, by calculation of the fields emitted by sources far away from the observer in advance and the use of interpolation in time, the time step size can be increased further. The coding complexity of this Ansatz is only slightly higher than that of the classical time-domain method of moments and thus offers a convenient way to decrease the memory requirement and the cpu time in the application of time domain method of moments. Numerical examples are presented to show that – using this Ansatz – the calculation time can be decreased without losing much accuracy.