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Electromagnetic Engineering in the 21st Century: Challenges and Perspectives

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Abstract: This paper aims at a broad-brush look at certain technological and educational challenges that confront wave-oriented electromagnetic (EM) engineering in the 21st century, in a complex computer and technology-driven world with rapidly shifting societal and technical priorities. Simulation strategies for complex EM systems, both analytic and numerical, are reviewed and categorized, and are illustrated on selected practical complex multicomponent system scenarios currently under investigation in Turkey. Educational issues to ensure proper multidisciplinary exposure of new generations of computer-weaned students, who will have to deal with these problems, are touched upon as well.

Key Words: electromagnetic engineering, electromagnetic education, analytical model, numerical model, numerical simulation, engineering challenges, fields and networks, verification, validation, accreditation, calibration

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