Numerical methods for solar cells simulations

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Various numerical techniques are available nowadays for physical modeling. For solar cells simulations two of the most important ones are the Finite Element Method (FEM) and the Fourier Modal Method (FMM). FEM is universal and suitable for both calculations of light absorption in solar cells and carriers transport, while FMM is a simple and powerful tool outperforming FEM in electromagnetic calculations of certain solar cells structures. An overview of both techniques and available software are presented along with techniques for combining FEM and FMM (and other methods) based on the scattering matrix approach.