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Role of central frequency in pulse shapes used in simulations of Time Dependent Schrödinger Equation[1] JOEL VENZKE, TENNESSE JOYCE, ZETONG XUE, JILA and Department of Physics, University of Colorado, Boulder, CORY GOLDSMITH, JILA and Department of Chemistry, University of Colorado, Boulder, RAN REIFF, AGNIESZKA JARON-BECKER, ANDREAS BECKER, JILA and Department of Physics, University of Colorado, Boulder — When performing numerical simulations of laser-matter interaction for pulses of few cycles, it is known that the electric field should be defined via the derivative of a given vector potential to guarantee that both field and potential vanish at the end of the pulse. It can be shown that in this case the central frequencies of the electric field and the vector potential do not agree. The frequency shift increases as the number of cycles in the pulse decreases. Examples of the effect will be shown for various ultrafast strong field processes.

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