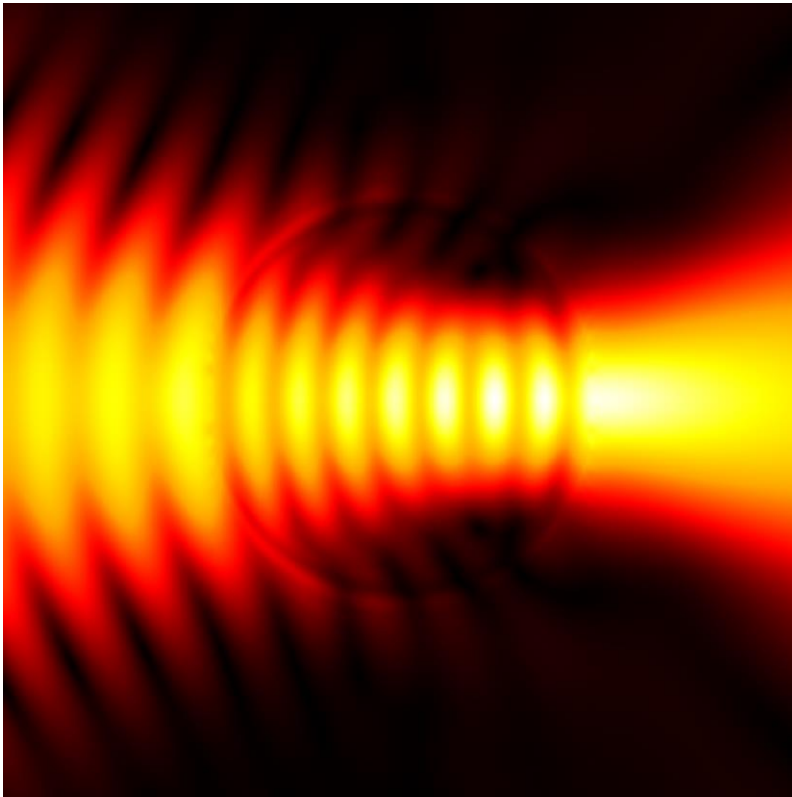


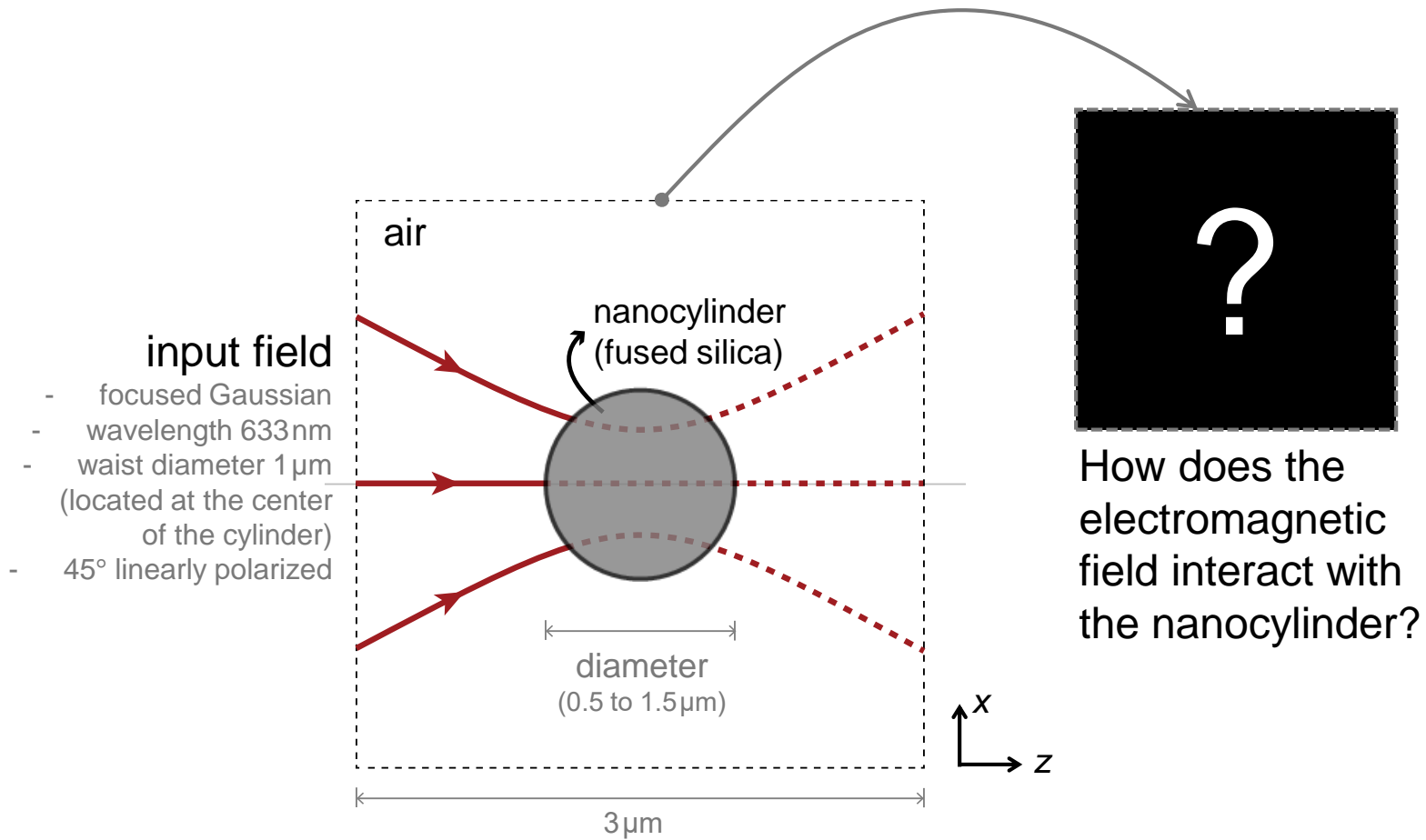
Electromagnetic Field Interaction with Nanocylinders

Abstract

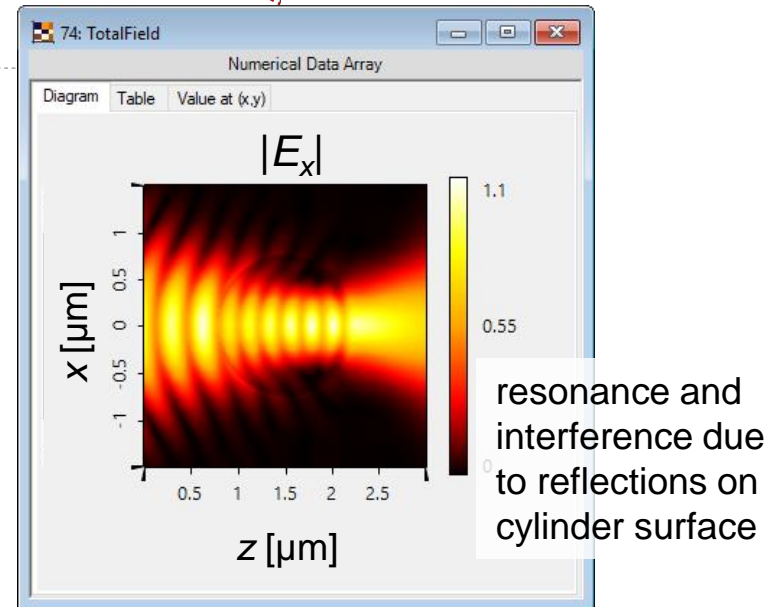
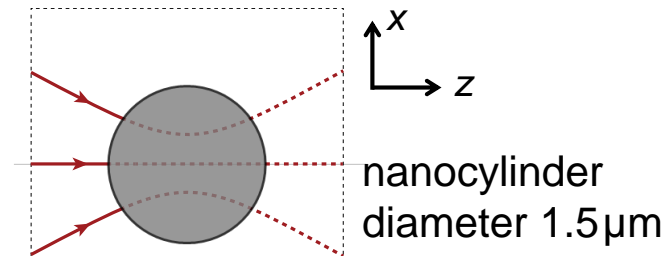
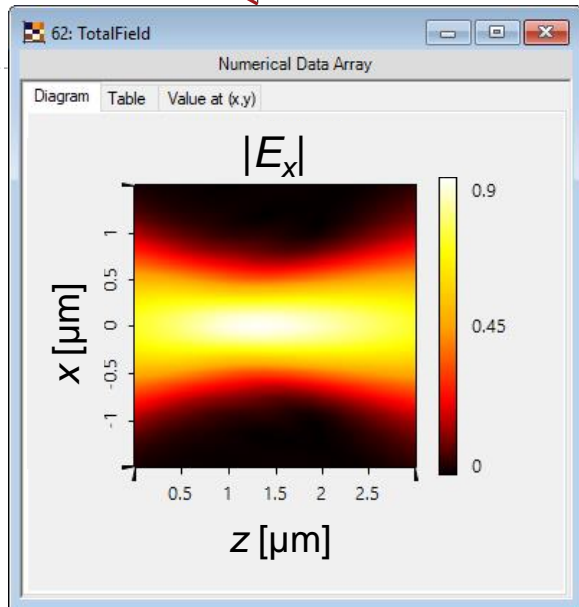
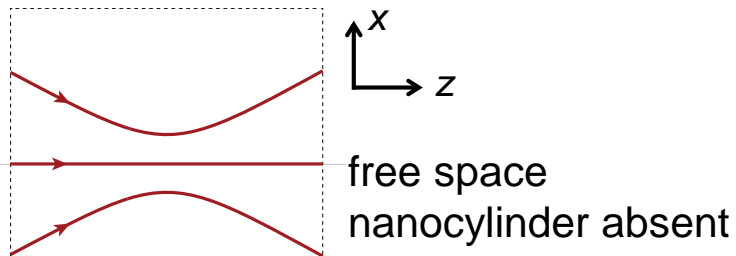


Interaction between electromagnetic fields and structures in the wavelength must be studied with rigorous Maxwell solvers. By integrating the perfectly matched layers (PMLs) technique, the modeling of aperiodic nanostructures is enabled in VirtualLab. As an example, the interaction between a focused Gaussian beam and nanocylinders with varying diameters is investigated, and the polarization-dependent effect is shown.

Modeling Task

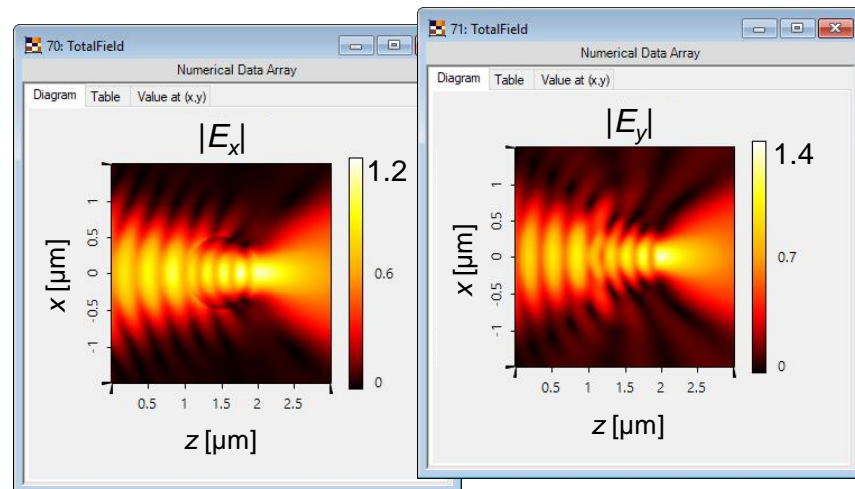
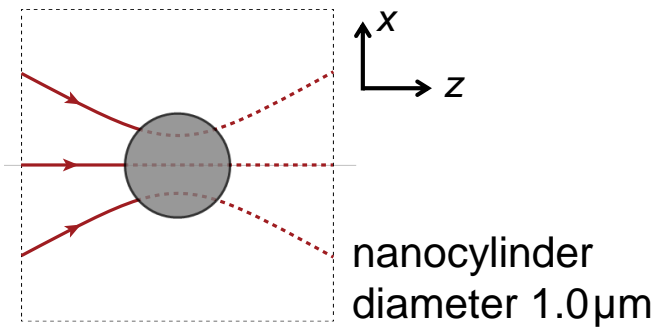
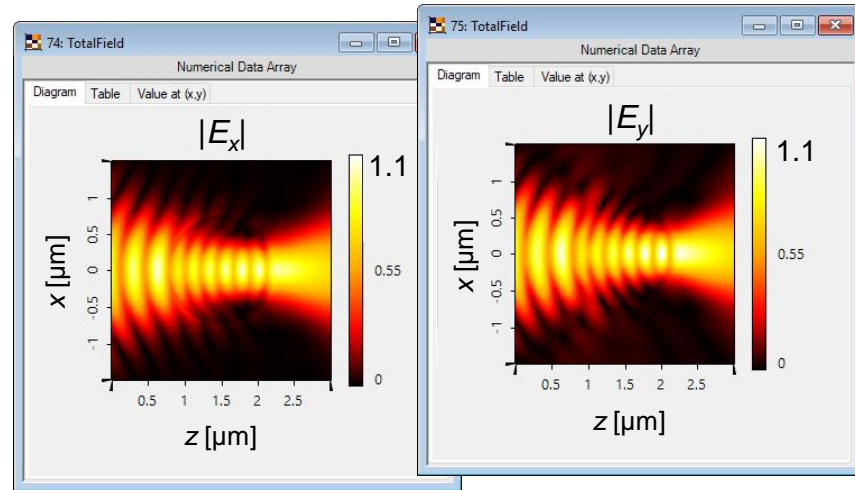
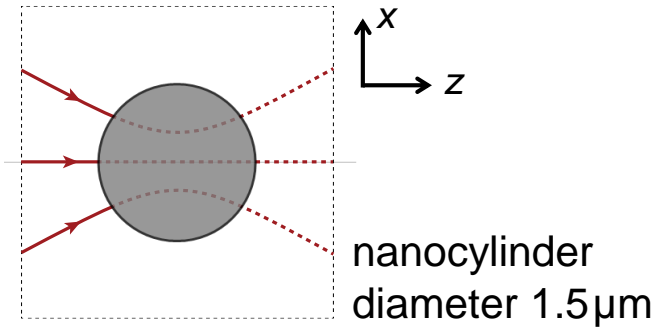


Results

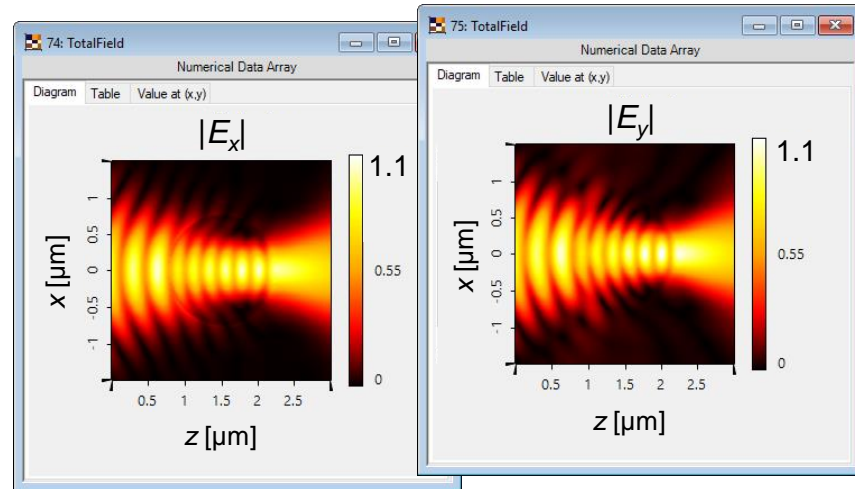
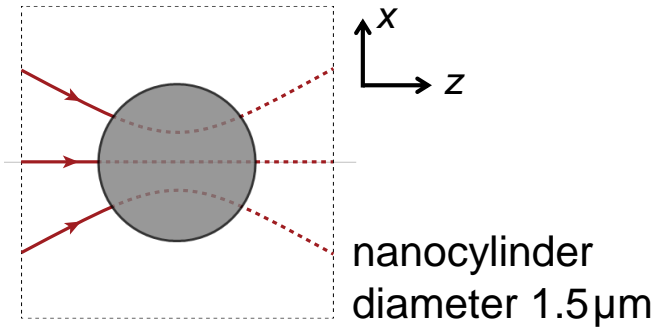


Fourier modal method (FMM) combined with perfectly matched layers (PMLs) enables the simulation of aperiodic nano structures. See reference in M. Pisarenco, *et al.*, J. Opt. Soc. Am. A 27, 2423-2431 (2010)

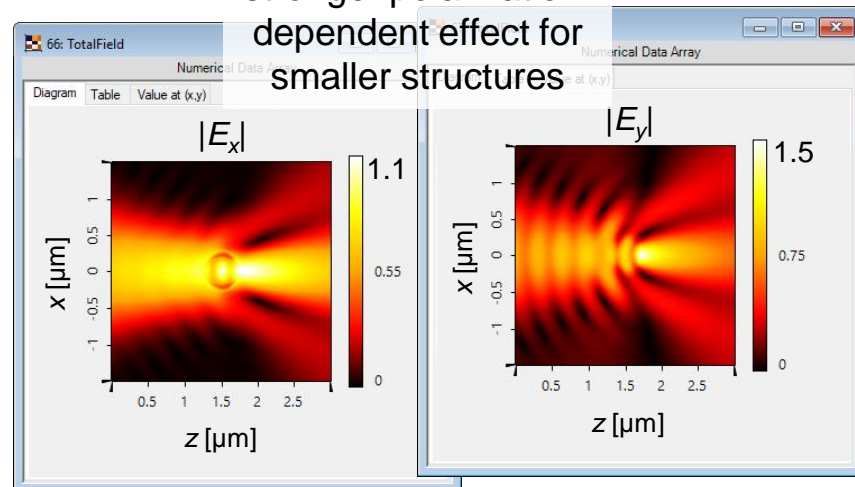
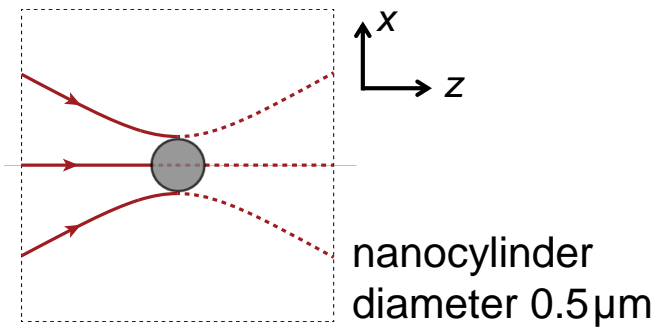
Results



Results

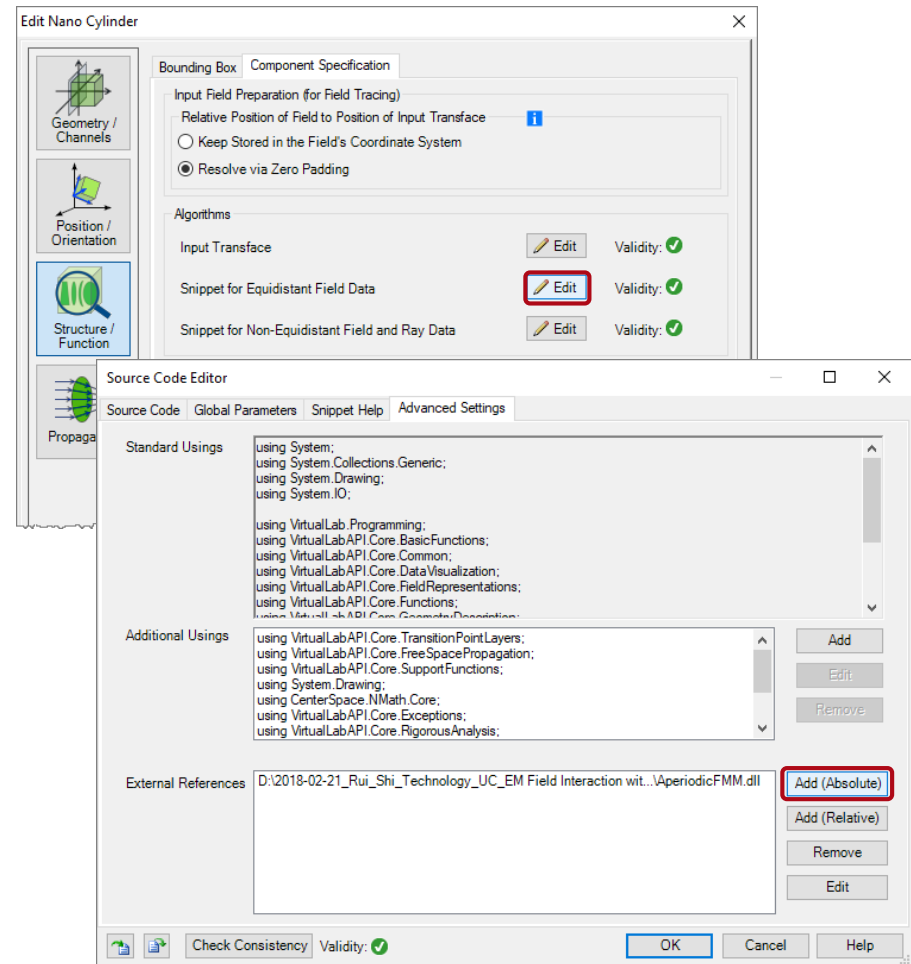


stronger polarization-
dependent effect for
smaller structures



Note on Sample Files

- To perform simulations shown in this example, one must run VirtualLab Fusion as administrator.
- The DLL file “*AperiodicFMM.dll*” in the sample files must be reloaded in the nano cylinder component.



Document Information

title	Electromagnetic Field Interaction with Nanocylinders
version	1.0
VL version used for simulations	7.0.3.4
category	Technology Use Case
