Picophotonics

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Abstract – **We demonstrate metrology and odometry (detection of change in position over time) with resolution in the nanometric - picometric scales by analyzing electrons or topologically structured light scattered from the nanostructures using artificial intelligence. We show how these techniques can be applied to characterization and optimization of nano-opto-mechanical metamaterials and the fundamental studies of dynamics of thermal motion and the physics of phonons in photonic nanostructures.**