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Detection of 3D Displacement of an Object Based on Volume Holographic
Filters

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Abstract

We propose a volume-holographic filter to perform 3D object filtering. Theoretical analysis and the corresponding experiment of the shifting tolerance of the volume-holographic filter are demonstrated. We find that the shifting selectivity is different for different shifting directions, which include laterally horizontal, laterally vertical, and longitudinal directions. The simulation results show that the shifting selectivity depends on the scale of the object and the distance between object and the holographic filters.