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# Physical-Optics Modelling of Interferometer-Based Metrology Systems

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## Abstract

Interferometer-based optical setups play an important role in modern optical metrology for different applications. Such setups often consist of multi-disciplinary components. This reveals new ways of improving the performance or enriching the functionality of the system, while at the same time leading to complexities and difficulties in system modeling and analysis. To overcome this, we present a physical-optics-based simulation approach. It is founded on a fully electromagnetic representation of light, and therefore includes the coherence and polarization effects which are of growing interest for modern interferometers. As examples, several typical optical interferometer setups are built up and analyzed. With the physical-optics modeling technique, we demonstrate and understand the functionalities of such setups, so as to help in the design of advanced optical interferometers.