An inverse problem arising in photolithography

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Abstract

Photolithography is a key process in the manufacturing of chips. In this presentation, we will start with an introduction to the sub-wavelength projection photolithography. The basic problem is that of optimal design. It involves creating masks through which light is projected to produce a desired intensity pattern. This problem is an example where the forward problem, as well as the the parametrization of the unknown, thus the inverse problem, are best formulated using the level set approach. We show how this can be done and demonstrate our approach in numerical examples.