534. Title:Optimal design of SPP-based metallic nanoaperture optical elements by using Yang-Gu algorithm

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Abstract:An optimization method for design of SPP-based metallic nanoaperture optical elements is presented. The design process is separated into two steps: Firstly, derive the amplitude and phase modulation of isolating single slit with different width; Secondly, realize the optimal design of element by using an iteration procedure. The Yang-Gu algorithm is expanded to perform this design. Three kinds of lenses which can achieve various functions have been designed by using this method. The rigorous electromagnetical theory is employed to justify and appraise the performances of the designed elements. It has been found that the designed elements can achieve the preset functions well. This method may provide a convenient avenue to optimally design metallic diffractive optical elements with subwavelength scale.