

Abstract Submitted  
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**Generation of broadband beam splitter by binary geometrical phase on metasurface**<sup>1</sup> XIANG XIONG, Nanjing University — One important optical component in photonics research is beam splitter (BS) which can change an incident beam into two or more. A BS is usually made of a cube by two glass prisms glued together with transparent resin. The thickness of the resin layer is used to adjust the power splitting ratio for a certain wavelength range. In modern optics, beams with exactly identical intensity and exactly the same polarization status is often required in order to investigate some fundamental quantum phenomena, such as quantum superposition and quantum randomness. However, practically isocratic beam splitting is not easy to create. In particular, with traditional approach even though sometime isocratic beam splitting can be managed at certain wavelength, a broadband functionality remains challenging. In this work, we realize a broadband beam splitter with metallic double-bar assembly structures. It has been experimentally realized that with this structure, a linearly polarized incident beam is manipulated and split to a pair of coherent beams in a broadband frequency. The coherent beams possess the same amplitude, frequency and polarization. Our designing provides a unique approach in realizing beam splitter function and can be applied in integrated optics.

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