

Metasurface based generation of an Airy beam

Shu Zhang^{a,*}, Renxian Li^{a,b,**}, Jiaming Zhang^a, Bojian Wei^a, Ningning Song^a,
and Han Sun^a

^a *School of Physics and Optoelectronic Engineering, Xidian University, Xi'an 710071, China.*

^b *Collaborative Innovation Center of Information Sensing and Understanding, Xidian University, Xi'an 710071, China.*

* *Presenting author (zhangs@stu.xidian.edu.cn)*

** *Corresponding author (rxli@xidian.edu.cn, rxli@mail.xidian.edu.cn)*

Airy beams have many characteristics such as self-bending [1], no diffracting [2], and lateral acceleration [3], and put a great impact on the applications of the trapping in the optical potential, converging transmitted energy during the bending process, and long-distance transmission. Therefore, there are many optical devices to generate Airy beam. To overcome the defect of low loss and heavy attenuation in conventional optical devices, novel devices based on a metasurface are developed [4,5], and they reduce the system complexity and improve system reliability. The metasurface is a material with a thickness less than the wavelength of the incident beam. It has characteristics of flattening and low loss.

In this paper, we design a metasurface to generate an Airy beam with low loss and high efficiency using commercial software COMSOL. The characteristics of the resulting Airy beam are tested and verified. The metasurface can be modified to generate arbitrary beams.

References

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