

This manuscript has been previously reviewed at another Nature Research journal. This document only contains reviewer comments and rebuttal letters for versions considered at Communications Physics.

REVIEWERS' COMMENTS:

Reviewer #1 (Remarks to the Author):

In this manuscript, the authors report realization of optical logic gate operations of NOT, OR, XOR, XNOR, NOR, and NAND using silicon based Ψ -shaped waveguide, through changing the bias power and relative phases. Wavelength-independent operation was also achieved. These results were interesting and may be useful for the study of optical information processing. The revisions were satisfied and the manuscript could be accepted.

Reviewer #2 (Remarks to the Author):

Although there is still a question whether the benefit of the proposed device is very large comparing with the previous publications or not, I admit the authors clearly answered most of the my queries about the scalability and cascadability. Also the comments added to the revised manuscript reflect the discussion in the response well. Now I think the current form should be fine to be accepted to Communications Physics.

Reviewer #3 (Remarks to the Author):

In the previous version, the authors presented the excellent properties of the Ψ Gates based on Si photonics platform. Since the novelty can't meet the standard of Nature Communications so I suggest the authors submit the work to other journals. While in this revised manuscript, the authors have made appropriate modifications to the manuscript and answered my questions. In general, Si wire-based gates do have their own unique advantages, and this work is indeed of good quality. So I believe it is suitable and worth publishing in Communications Physics.