

# The Dynamic Control Around Exceptional Points

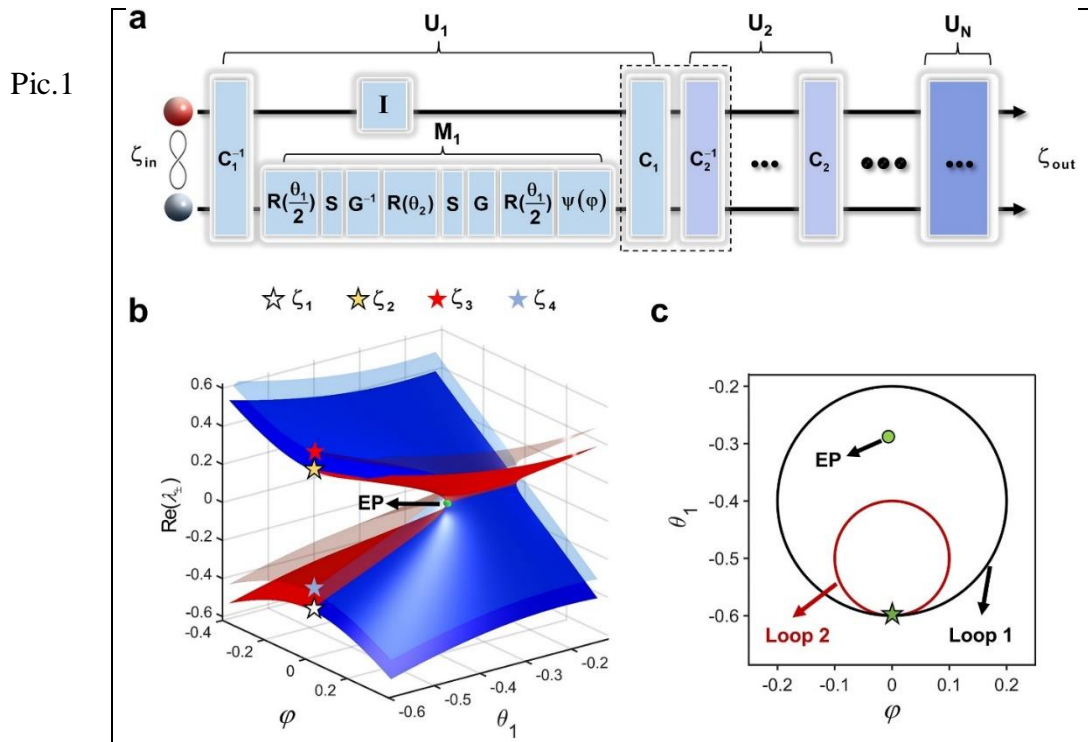
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## Abstract

The robust operation of quantum entanglement states are crucial for applications in quantum information, computing, and communications. However, it has always been a great challenge to complete such a task because of decoherence and disorder. In this talk, we propose theoretically and demonstrate experimentally an effective scheme to realize robust operation of quantum entanglement states by designing quadruple degeneracy exceptional points. Owing to the topological protection conferred by the Riemann surface structure, this switching of chirality exhibits strong robustness against perturbations in the encircling path. Furthermore, we have experimentally validated such a scheme on a quantum walk platform. Our work opens up a new way for the application of non-Hermitian physics in the field of quantum information.



Topologically protected entanglement switching around exceptional points

## Bibliography

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- [2] Z. Tang, T. Chen, X. Tang, and X. Zhang. Light: Sci. & Appl. 13, 167 (2024).