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(POS-63) Engineering the geometry of space time: Emergence of Majorana fermions

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In 2010 Sau *et al* proposed a topological superconducting Majorana fermions can be realized in a semiconductor
quantum well coupled to an s-wave superconductor and a ferromagnetic insulator. In the same year, Alica, proposed a simpler architecture for detecting Majorana fermions by applying an in-plane magnetic field to a (110)-grown
semiconductor coupled only to an s-wave superconductor. Here we propose an alternative setup, wherein a topological superconducting phase is in proximity to a tilted Dirac materials with a variable tilt parameter, in order to explore if the system can be driven into a topological superconducting state. Success creating topological superconductors would open these systems up as a unique flexible platform for topological quantum computation.

Keyword-1

Geometry of space-time

Keyword-2

Majorana Fermions

Keyword-3

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