

## Characteristics of Majorana modes in cylindric wires

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We report theoretical calculations of Majorana modes in semiconductor wires with cylindrical symmetry. Peculiar features like topological phases hosting two different Majorana modes on the same edge, as well as characteristic spatial distributions of the densities are found. The modelling is done assuming a space continuum approach, as opposed to tight-binding chains, and emphasis is placed on the role of the orbital effects induced by the magnetic field and on the mixing mechanism induced by spin-orbit coupling. We discuss results for finite cylinders, where the two opposite edges interfere, as well as for semi-infinite wires where Majorana modes, if present, are not disturbed by finite size effects. The Majorana physics in cylinders is compared with that of planar structures we have previously investigated in Refs. [1, 2, 3].

[1] J. S. Lim, L. Serra, R. López, and R. Aguado, Phys. Rev. B **86**, 121103 (2012).

[2] J. S. Lim, R. López, and L. Serra, New Journal of Physics **14**, 083020 (2012).

[3] L. Serra, Phys. Rev. B **87**, 075440 (2013).

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