Molecular Andreev bound states and Majorana modes in a double dot system

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In this work we study a system composed by a two inter-connected QDs in which one of them is coupled to a normal superconductor and to a normal lead while the other is coupled to a topological superconductor and to a distinct normal metallic lead. We show that in the atomic limit (for small interdot coupling), one of the dot has a pair of ABS whereas the other has a single a MBS. More interestingly, in the molecular regime (large inter-dot coupling) we observe a localized Majorana mode coexisting with a delocalized molecular ABS.

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