

Abstract Submitted  
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**Conductance plateau due to Majorana bound state in a quantum dot coupled to a topological quantum wire**<sup>1</sup> EDSON VERNEK, University of São Paulo/ Federal University of Uberlândia, POLIANA PENTEADO, University of São Paulo, ANTONIO SERIDONIO, UNESP - Ilha Solteira, JOSÉ C. EGUES, University of São Paulo — The search for Majorana bound state (MBS) in topological superconductor nanowires is currently a topic of great interest. Despite the various theoretical proposals and the experimental results, the question of whether the possible signatures of MBS can be distinguished from those arising from other phenomena such as the Kondo effect is still under debate. A recent proposal for detecting MBS using a quantum dot coupled to normal two leads and to a topological quantum wire has proven to be very appropriate structure to investigate this problem. In this system, the presence of MBS in the wire is marked as a  $e^2/2h$  conductance through the dot. In this work we find, that the  $e^2/2h$  conductance peak is not per se an distinct signature of a MBS in the wire. We show instead that it results from a leaking of the Majorana state into the dot [1]. Moreover, by gating the dot level ( $\varepsilon_d$ ) far away below and above the Fermi level of the leads ( $\varepsilon_F$ ), the conductance remains at  $e^2/2h$ . The surviving of the conductance plateau for  $\varepsilon_d > \varepsilon_F$  contrasts with Kondo effect plateau known to emerge only for  $\varepsilon_d < \varepsilon_F$ .

[1] E. Vernek, P. H. Penteado, A. C. Seridonio and J. C. Egues, arXiv:1308.0092 (2013).

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