



## 科学前沿报告会 (256)

# Decoherence Patterns of Topological Qubits from Majorana Modes

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### 报告摘要

We investigate the decoherence patterns of topological qubits in contact with the environment by a novel way of deriving the open system dynamics other than the Feynman-Vernon. Each topological qubit is made of two Majorana modes of a 1D Kitaev's chain. These two Majorana modes interact with the environment in an incoherent way which yields peculiar decoherence patterns of the topological qubit. More specifically, we consider the open system dynamics of the topological qubits which are weakly coupled to the fermionic/bosonic Ohmic-like environments. We find that the topological qubits decohere completely in the Ohmic and sub-Ohmic environments but not in the super-Ohmic ones. This is in contrast to the cases of non-topological qubits for which they always decohere completely in all Ohmic-like environments unless the probe-environment is strong enough.

### 报告人简介

Prof. Feng-Li Lin is currently working at Department of Physics, National Taiwan Normal University. Prof, Lin's research covers many topics in theoretical sciences, including string theory, black hole physics, quantum information sciences and strongly correlated condensed matter systems. Recently, he is interested in the inter-disciplinary study of the related topics on quantum entanglement. For details of his publications, please visit <http://phy.ntnu.edu.tw/~linfengli/>.