Thermoelectric transport through Majorana bound states and violation of Wiedemann-Franz law[1] JUAN PABLO RAMOS-ANDRADE, Universidad Técnica Federico Santa María, Valparaíso, Chile, OSCAR ÁVALOS-OVANDO, Ohio University, Athens, OH, USA, PEDRO ORELLANA, Universidad Técnica Federico Santa María, Valparaíso, Chile, SERGIO ULLOA, Ohio University, Athens, OH, USA — Our work model a system composed by two current leads and a one-dimensional topological nanowire (NW) hosting Majorana bound states (MBS) at each edge and coupled between them with a strength ε_M. The NW is coupled symmetrically to the leads at temperature difference ΔT. We study thermoelectric transport across the NW, for two different configurations: A) When only one MBS is connected to the leads and B) when both MBS are connected to the leads. We find a noticeable violation of the Wiedemann-Franz law, which leads to obtaining sizable values of thermoelectric efficiency, measured by the figure of merit, and also an ε_M-independent behavior of the Seebeck coefficient for configuration A. We believe our findings could lead to interesting thermoelectric-based Majorana detection devices.

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Juan Pablo Ramos Andrade
Universidad Técnica Federico Santa María, Valparaíso, Chile

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