Effects on the electron conductivity emerging from Majorana zero modes MIKLOS GULACSI, PASQUALE SODANO, Max Planck Institute for the Physics of Complex Systems, Dresden, Germany — The link between single particle random Hamiltonians and non-linear sigma models (NLSM) comes about when setting up a generating function for the mean value taken by the product of Green's functions. Using the standard machinery of the replica trick we derived disorder averaged product of the retarded and advanced Green's functions from an effective NLSM describing low energy physics of graphene films with both disorder and defects. We then compute the electron transport properties and we find remarkable effects arising when the defect topology is such that the Majorana fields acquire zero modes.

Miklos Gulacsi
Australian National University, Canberra