Topological phase transitions in a doped Sr$_2$IrO$_4$ / metal heterostructure$^1$ MATS HORSDAL, University of Oslo, TIMO HYART, University of Jyvaskyla — Doped Sr$_2$IrO$_4$ is predicted to be a high $T_C$ d-wave superconductor. As opposed to the cuprates, the Cooper pairs are not spin singlets, but rather pseudospin singlets. The pseudospin describes highly entangled spin and orbital degrees of freedom. This difference is not apparent when considering Sr$_2$IrO$_4$ as an isolated system. However, when tunnel coupled to a metallic $t_{2g}$ electron system this gives rise to a rich topological phase diagram, which has been mapped out and will be presented.

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