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Non-Abelian fractional topological insulators in three spatial dimensions from coupled wires THOMAS IADECOLA, Boston University, TITUS NEUPERT, University of Zurich, CLAUDIO CHAMON, Boston University, CHRISTOPHER MUDRY, Paul Scherrer Institute — The study of topological order in three spatial dimensions constitutes a major frontier in theoretical condensed matter physics. Recently, substantial progress has been made in constructing (3+1)-dimensional Abelian topological states of matter from arrays of coupled quantum wires. In this talk, I will illustrate how wire constructions based on non-Abelian bosonization can be used to build and characterize non-Abelian symmetry-enriched topological phases in three dimensions. In particular, I will describe a family of states of matter, constructed in this way, that constitute a natural non-Abelian generalization of strongly correlated three dimensional fractional topological insulators. These states of matter support strongly interacting symmetry-protected gapless surface states, and host non-Abelian pointlike and linelike excitations in the bulk.

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