

Just as the exceptional Lie groups were discovered via the Killing-Cartan program of classification, the classification of small index subfactors is producing examples of exotic subfactors.

By contrast, fusion categories with integer dimension objects are conjectured to be ‘weakly group-theoretical’, essentially definable in terms of group-theoretic data.

The new exotic subfactors and fusion categories we are finding

- constrain possible structural theorems,
- give counterexamples to conjectures, and
- give interesting examples of new modular data and thus exotic 3-manifold invariants.