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**Asger Tornquist\*** ([asger@math.utoronto.ca](mailto:asger@math.utoronto.ca)), 40 St. George Street, room 6290, University of Toronto, Toronto, Ontario M5S2E4, Canada. *The classification problem for separable von Neumann factors.*

In von Neumann algebra theory, a factor is a von Neumann algebra in which the center consists of multiples of the identity. Factors make up the building blocks out of which any other von Neumann algebra can be build. The problem of classifying von Neumann factors is therefore as old as the subject itself.

In this talk I will discuss a recent result (joint with Roman Sasyk, Ottawa), where we show that separable von Neumann factors are not classifiable by a reasonable assignment of invariants that are countable structures, in particular, there is no suitably "Borel" assignment of countable groups, graphs or other countable structures as complete invariants for the isomorphism relation of separable factors. The proof involves among other things Greg Hjorth's theory of turbulence, the group-measure space construction, and the deformation/rigidity techniques developed by Sorin Popa. (Received September 10, 2008)