

HARVARD UNIVERSITY
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Tuesday, July 14, 2020, at 10:00 (Boston)
15:00 (UK/Eire) 16:00 (C.Europe) 22:00 (China)

Mathematical Picture Language Seminar
Zoom at: <https://harvard.zoom.us/j/779283357>

Integrability and Braided Tensor Categories
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Abstract. Many integrable critical classical statistical mechanical models and the corresponding quantum spin chains possess a fractional-spin conserved current. Such currents have been constructed by utilizing quantum-group algebras, fermionic and parafermionic operators, and ideas from “discrete holomorphicity”. I define them generally and naturally using a braided tensor category, a topological structure familiar from the study of knot invariants, anyons and conformal field theory. I derive simple constraints on the Boltzmann weights necessary and sufficient for such a current to exist, generalizing those found using quantum-group algebras. I find many solutions, in both geometric and local models. In all cases, the resulting weights are those of an integrable lattice model, giving a linear construction for “Baxterising”, i.e. building a solution of the Yang-Baxter equation out of topological data.

