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Seminar

Spark algebras and quantum groups

by

Professor Tudor Dimofte
University of Edinburgh

Abstract

Line operators in 3D topological quantum field theories are expected to form a braided tensor category, which in principle, by Tannakian formalism, might be expected to appear as a category of modules for a "quantum group" (more generally: a quasi-triangular Hopf algebra). However, it has long been a difficult problem to extract such quantum groups directly from topological QFT. I'll explain a constructive solution to this problem, using boundary conditions and so-called "spark algebras". Mathematically, it amounts to a topologization of Drinfeld's double construction, in extended TQFT. Physically, it yields a straightforward prescription for identifying quantum groups in field theory. I'll discuss applications to twists of 3D $N=4$ gauge theories and (time-permitting) to Kazhdan-Lusztig correspondences for logarithmic vertex operator algebras. Work in progress with T Creutzig and W Niu.

Date	:	**22 February 2024 (Thursday)**
Time	:	**2:00pm – 3:00pm**
Venue	:	**Room 502a, Academic Building I**

All are Welcome