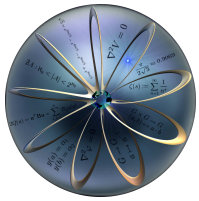

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quantum category

Canonical name	QuantumCategory
Date of creation	2013-03-22 18:16:52
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Entry type	Definition
Classification	msc 18-00
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Synonym	quantum groupoid category
Related topic	QuantumGroupoids2
Related topic	QuantumGroups
Related topic	QuantumAutomataAndQuantumComputation2
Related topic	QuantumTopos
Defines	quantum groupoid homomorphism
Defines	quantum category objects
Defines	quantum category with Haar measures

Definition 0.1. A *quantum category* $\mathcal{Q}$ is defined as the (non-Abelian) category of quantum groupoids, $[Q_{\mathsf{G}}]_i$, and quantum groupoid homomorphisms, $[q_{\mathsf{G}}]_{ij}$, where i and j are indices in an index class, $\mathbf{I}$, all subject to the usual ETAC axioms and their interpretations.

Remark 0.1. The category of quantum groupoids, $[Q_{\mathsf{G}}]_i$, is trivially a subcategory of the groupoid category, that can also be regarded as a functor category, or 2-category, if G is small, that is, if G^0 is a set rather than a class.

Remark 0.2. One notes that an alternative definition of quantum category has also been reported in physical mathematics as a rigid monoidal category, or its equivalent. A more general definition of *quantum category* is however necessary that has both quantum groups and locally compact quantum groupoids as particular cases. This would require a notion of quantum compactness in a category as well as the definition of associated Haar systems to a category.

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[3] Butterfield, J. and C. J. Isham: 1998, 1999, 2000–2002, A topos perspective on the Kochen–Specker theorem I - IV, *Int. J. Theor. Phys*, **37** No 11., 2669–2733 **38** No 3., 827–859, **39** No 6., 1413–1436, **41** No 4., 613–639.