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The Quantum Double of a (locally) Compact Group

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Abstract. We generalise the quantum double construction of Drinfel'd to the case of the (Hopf) algebra of suitable functions on a compact or locally compact group. We will concentrate on the $*$-algebra structure of the quantum double. If the conjugacy classes in the group are countably separated, then we classify the irreducible $*$-representations by using the connection with so–called transformation group algebras. For finite groups, we will compare our description to the result of Dijkgraaf, Pasquier and Roche. Finally we will work out the explicit examples of $SU(2)$ and $SL(2,\mathbb{R})$.

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