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Trace Class Groups

A representation π of a locally compact group G is called *trace class*, if for every test function f the induced operator $\pi(f)$ is a trace class operator. The group G is called *trace class*, if every $\pi \in \widehat{G}$ is trace class. In this paper we give a survey of what is known about trace class groups and ask for a simple criterion to decide whether a given group is trace class. We show that trace class groups are type I and give a criterion for semi-direct products to be trace class and show that a representation π is trace class if and only if $\pi \otimes \pi'$ can be realized in the space of distributions.

Keywords: Trace class operator, type I group, unitary representation.

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