

Topologies on Central Extensions of Von Neumann Algebras

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Given a von Neumann algebra M we consider the central extension $E(M)$ of M . We introduce the topology $t_c(M)$ on $E(M)$ generated by a center-valued norm and prove that it coincides with the topology of convergence locally in measure on $E(M)$ if and only if M does not have direct summands of type II. We also show that $t_c(M)$ restricted on the set $E(M)_h$ of self-adjoint elements of $E(M)$ coincides with the order topology on $E(M)_h$ if and only if M is a σ -finite type I_{fin} von Neumann algebra.

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