

Normalizers of Subfactors

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The normalizer $\mathcal{N}_M(B)$ of a subalgebra B of a type II_1 factor M has been studied in various contexts. In this work, we study the relationship between the structure of the group of normalizing unitaries and the von Neumann algebra it generates. We show that $\mathcal{N}_M(B)$ imposes a discrete crossed product structure on the generated von Neumann algebra. By analyzing the structure of weakly closed bimodules in $\mathcal{N}_M(B)$, this leads to a “Galois-type” theorem for normalizers, in which we find a description of the subalgebras of $\mathcal{N}_M(B)$ in terms of a unique countable subgroup of $\mathcal{N}_M(B)$. Implications for inclusions $B \subseteq M$ arising from the group von Neumann algebra and tensor product constructions will also be addressed. Our work also yields new examples of norming subalgebras in finite von Neumann algebras: If $B \subseteq M$ is a regular inclusion of II_1 factors, then B norms M .

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