Jan Cameron*, Department of Mathematics, Mailstop 3368, Texas A&M University, College Station, TX 77843-3368. Structure results for normalizers of II$_1$ factors.

For an inclusion of II$_1$ factors $N \subset M$ we study the normalizer $N_M(N) = \{ u \in U(M) : uN^*u = N \}$ and the von Neumann algebra it generates. We obtain a crossed product decomposition of the generated von Neumann algebra with respect to a countable discrete subgroup of $N_M(N)$.

By analyzing the structure of certain weakly closed modules in $N_M(N)''$, this leads to a “Galois-type” theorem for normalizers, in which we find a description of intermediate subalgebras of $N_M(N)''$ in terms of a unique countable subgroup of the normalizing group. Implications for inclusions $N \subset M$ arising from the crossed product, group von Neumann algebra, and tensor product constructions are also addressed. Our work leads to a construction of new examples of norming subalgebras of II$_1$ factors: If $N \subseteq M$ is a regular inclusion of II$_1$ factors, then $N$ norms $M$. (Received September 15, 2008)