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 E_0 -semigroups of von Neumann algebras

The study of E_0 -semigroups of a type I_∞ factor was initiated by R. Powers and W. Arveson, and many interesting classification results were obtained in the last years. Our purpose, in this talk, is to investigate the structure of E_0 -semigroups that act on arbitrary von Neumann algebras. We show that such a semigroup can be canonically decomposed as the direct sum of an inner E_0 -semigroup and a properly outer E_0 -semigroup. This decomposition is stable under conjugacy and cocycle conjugacy. We also show that the class of inner E_0 -semigroups can be completely characterized in terms of product systems.