

TRACE FORMULAE IN FINITE VON NEUMANN ALGEBRAS

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ABSTRACT

The dissertation is devoted to some aspects of spectral perturbation theory in the context of finite von Neumann algebras. The central results are analogs of the Birman-Schwinger principle and the Birman-Krein formula for the ξ -index, a spectral parameter independent counterpart of Krein's spectral shift function.

The proofs of the main results are based on diverse properties of the operator logarithm and argument averaged with respect to a normal tracial state that are derived in this work. In addition, formula representations for the ξ -index and the ξ -function are obtained and the concept of the ξ -index is related to that of the spectrum distribution function for some random operators.