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Trace defect formulas for pseudodifferential operators on closed and singular manifolds

Recently obtained precise formulas for the coefficients in the asymptotic expansion of the heat trace and spectral zeta function of a PDO have provided new insight into the structure of the anomalous terms of the associated 'trace' functionals; for example, for the multiplicative anomaly of the zeta determinant arising from the trace of a logarithm operator. The aim of this talk is to review and explain the new formulae for closed manifolds and then outline aspects of current work to understand the theory on singular spaces and for the wave trace.