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Analytic torsion and the Cheeger-Müller theorem

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Abstract: Analytic torsion is an important secondary spectral invariant of compact Riemannian manifolds. The famous Cheeger-Müller theorem states that for a compact Riemannian manifold equipped with a unitary flat vector bundle the analytic torsion is equal to the topological torsion, and hence a topological invariant. In the first part of this talk I will recall the definition of analytic torsion, the Cheeger-Müller theorem, and how it has been used in the past 10 years e.g. to answer questions motivated from the study of the cohomology of arithmetic groups. In the second part I will speak about the generalisation of analytic torsion and of the Cheeger-Müller theorem to singular spaces.