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A Cheeger-Müller theorem on manifolds with cusps

The Cheeger-Müller theorem relates the R-torsion and analytic torsion on a closed manifold. On a manifold with conical singularities, Dar introduced in 1987 the intersection R-torsion, which is defined in terms of intersection cohomology, and asked if this could be related to the analytic torsion of some metric geometrically encapsulating the information about the singularities. In this talk, we will provide a positive answer to this question by relating the intersection R-torsion with the analytic torsion of a cusp metric. The strategy will be to start with a closed manifold and to pinch a hypersurface to obtain a cusp manifold. Computing what is happening to the R-torsion and analytic torsion under such a degeneration then gives the result. This is a joint work with Pierre Albin and David Sher.