A dynamical analogue of Lichtenbaum's recent conjectures on special values of zeta functions

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In recent years Stephen Lichtenbaum has proposed a new conjecture on the leading coefficient in the Taylor expansion at $s = 0$ of the Hasse-Weil zeta function of an arithmetic scheme over the integers. Conjecturally the leading coefficient should be obtained essentially as the Euler characteristic of a certain acyclic complex with volume forms made out of suitable (Weil-etale) cohomology groups. For the spectrum of a number ring i.e. for the Dedekind zeta function of a number field, Lichtenbaum has been able to compute his cohomology groups and verify his conjecture.

For several years, we have studied analogies between arithmetic schemes and spaces with a one-codimensional foliation and a flow respecting this foliation. In the lecture we explain some reason's for this analogy. Then we prove the exact analogue of Lichtenbaum's conjecture in this context, with the Hasse-Weil zeta function replaced by the Ruelle zeta function. The proof uses a transversal index theorem and the Cheeger Mueller theorem on the equality of analytic torsion and Reidemeister torsion.