Lie algebroids and index theory

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Lie algebroids are generalizations of Lie algebras and tangent bundles. In the first part of this talk I will present the computation of the Hochschild and cyclic homology of their universal enveloping algebras in terms of Lie algebroid cohomology, generalizing earlier results by Kassel (Lie algebras) and Wodzicki (tangent bundles). In these computations the Lie-Poisson structure on the dual of the Lie algebroid plays an important role. In the second part of the talk I will explain how, by finding a symplectic framework for this Poisson structure, we can derive an index theorem generalizing the index theorem for differential operators of Bressler-Nest-Tsygan. This talk is based on joint work with Arie Blom.