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# Derived representation schemes, Lie (co)homology and a Macdonald type conjecture

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We explicitly relate the homotopy commutative DGA corresponding to the derived representation scheme DRep_n(A) of an augmented algebra A to the Chevalley-Eilenberg homology of Lie coalgebras arising out of certain DG coalgebras associated with A. As a result, we can construct a natural map (of homotopy commutative DGAs) from DRep_n(A) to the n-th symmetric power of DRep_1(A). The latter map can be viewed as a derived Harish-Chandra homomorphism. For A a polynomial algebra, we obtain explicit formulas for the composition of the derived Harish-Chandra homomorphism with the higher traces from (reduced) cyclic homology. We further conjecture that when A=k[x,y], this map is in fact, a quasi-isomorphism. Time permitting, we will try to explain how our conjecture, if true leads to a new Macdonald type identity.

(This is joint work with Yuri Berest, Giovanni Felder and Aliaksandr Patotski.)

## Mots Clés / Keywords

Derived representation scheme; Lie cohomology

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