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Hopf-cyclic Cohomology of Connes-Moscovici Hopf algebras with nontrivial Coefficients

It is a joint work with B.Rangipour and S.Sütlü.

I will show that the space $\Omega_n^{\leq 1}$ of formal differential ≤ 1 -forms on \mathbb{R}^n has an (induced) SAYD module structure on the Connes-Moscovici Hopf algebra \mathcal{H}_n . Then we will see that the Hopf-cyclic cohomology \mathcal{H}_n with coefficients in formal differential forms is identified with the Gelfand-Fuks cohomology of the Lie algebra W_n of formal vector fields on \mathbb{R}^n . Furthermore, I will introduce a multiplicative structure on the Hopf-cyclic bicomplex, and we will see that this van Est type isomorphism is multiplicative. I finally show the whole machinery in the case $n = 1$; by pulling back the multiplicative generators of $H^*(W_1, \Omega_1^{\leq 1})$ to $H^*(\mathcal{H}_1, \Omega_{1\delta}^{\leq 1})$.