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Rankin-Cohen brackets and the Hopf algebra of transverse geometry. (English)

Mosc. Math. J. 4, No. 1, 111-130 (2004).

Summary: We settle in this paper a question left open in our paper [Mosc. Math. J. 4, No. 1, 67–109 (2004; Zbl 1122.11023)] by showing how to extend the Rankin-Cohen brackets from modular forms to modular Hecke algebras. More generally, our procedure yields such brackets on any associative algebra endowed with an action of the Hopf algebra of transverse geometry in codimension one, such that the derivation corresponding to the Schwarzian derivative is inner. Moreover, we show in full generality that these Rankin-Cohen brackets give rise to associative deformations.

MSC:

11F32 Modular correspondences, etc.
11F75 Cohomology of arithmetic groups
11F25 Hecke-Petersson operators, differential operators (one variable)
16W30 Hopf algebras (associative rings and algebras) (MSC2000)
58B34 Noncommutative geometry (à la Connes)

Keywords:

Rankin-Cohen brackets; modular Hecke algebras; Hopf symmetry; inner Schwarzian cocycle; quadratic differential; transverse fundamental class; Rankin-Cohen deformations of algebras

Full Text: arXiv Link