Japan. J. Math. 16, 203–246 (2021)
DOI: 10.1007/s11537-021-2109-2

JAPANESE JOURNAL OF MATHEMATICS
SINCE 1924

Classical and variational Poisson cohomology

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Received: 27 January 2021 / Revised: 22 May 2021 / Accepted: 30 May 2021
Published online: 9 August 2021

Communicated by: Yasuyuki Kawahigashi

Abstract. We prove that, for a Poisson vertex algebra $\mathscr{V}$, the canonical injective homomorphism of the variational cohomology of $\mathscr{V}$ to its classical cohomology is an isomorphism, provided that $\mathscr{V}$, viewed as a differential algebra, is an algebra of differential polynomials in finitely many differential variables. This theorem is one of the key ingredients in the computation of vertex algebra cohomology. For its proof, we introduce the sesquilinear Hochschild and Harrison cohomology complexes and prove a

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vanishing theorem for the symmetric sesquilinear Harrison cohomology of the algebra of differential polynomials in finitely many differential variables.

Keywords and phrases: Poisson vertex algebra (PVA), classical operad, classical PVA cohomology, variational PVA cohomology, sesquilinear Hochschild and Harrison cohomology

Mathematics Subject Classification (2020): Primary 17B69; Secondary 17B63, 17B65, 17B80, 18D50