

# Rationality and Cohomology of Quadratic Poisson Structures

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## Abstract

We promote known results on formal cohomology of quadratic Poisson structures to the smooth setting for quadratic Poisson structures on  $\mathbb{R}^n$ . There is a 3 real parameter family of such structures on  $\mathbb{R}^3$  and a surprising consequence of these results is that the smooth Poisson cohomology of such structures is finite dimensional if and only if the three parameters are distinct and not all rational of the same sign. We provide geometric and analytic interpretations. This is combines joint work with Berit N. Givens (CPP) and Melinda Lanius (UIUC) on the general problem, with work on the interpretation in three dimensions with Joshua Silva (CPP).