



THE WEIZMANN INSTITUTE OF SCIENCE
FACULTY OF MATHEMATICS AND COMPUTER SCIENCE

Algebraic Geometry and Representation Theory Seminar

on Wednesday, Jun 03, 2020
at 16:30

ZOOM MEETING: [HTTPS://WEIZMANN.ZOOM.US/J/98304397425](https://weizmann.zoom.us/j/98304397425)

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WIS

A relative de Rham theorem for Nash Submersions

Abstract:

For a Nash manifold X and a Nash vector bundle E on X , one can form the topological vector space of Schwartz sections of E , i.e. the smooth sections which decay fast along with all derivatives. It was shown by Aizenbud and Gourevitch, and independently by Luca Prelli, that for a Nash manifold X , the complex of Schwartz sections of the de Rham complex of X has cohomologies isomorphic to the compactly supported cohomologies of X .

In my talk I will present a work in progress, joint with Avraham Aizenbud, to generalize this result to the relative case, replacing the Nash manifold M with a Nash submersion $f:M \rightarrow N$. Using infinity categorical methods, I will define the notion of a Schwartz section of a Nash bundle E over a complex of sheaves with constructible cohomologies, generalizing the notion of Schwartz section on an open semialgebraic set. I will then relate the Schwartz sections of the relative de Rham complex of a Nash submersion $f:M \rightarrow N$ with the Schwartz functions on N over the derived push-forward with proper support of the constant sheaf on M . Finally, I will conclude with some applications to the relation between the Schwartz sections of the relative de Rham complex and the topology of the fibers of f .

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