



## Seminar/Talk

# Revisiting mixed geometry

**Quoc P. Ho**

Hong Kong University of Science and Technology

Host: Tamas Hausel

I will present joint work with Penghui Li on our theory of graded sheaves on Artin stacks. Our sheaf theory comes with a six-functor formalism, a perverse t-structure in the sense of Beilinson--Bernstein--Deligne--Gabber, and a weight (or co-t-)structure in the sense of Bondarko and Pauksztello, all compatible, in a precise sense, with the six-functor formalism, perverse t-structures, and Frobenius weights on ell-adic sheaves. The theory of graded sheaves has a natural interpretation in terms of mixed geometry à la Beilinson--Ginzburg--Soergel and provides a uniform construction thereof. In particular, it provides a general construction of graded lifts of many categories arising in geometric representation theory and categorified knot invariants. Historically, constructions of graded lifts were done on a case-by-case basis and were technically subtle, due to Frobenius' non-semisimplicity. Our construction sidesteps this issue by semi-simplifying the Frobenius action itself. As an application, I will conclude the talk by showing that the category of constructible B-equivariant graded sheaves on the flag variety  $G/B$  is a geometrization of the DG-category of bounded chain complexes of Soergel bimodules.

**Thursday, March 17, 2022 01:00pm - 03:00pm**

<https://mathseminars.org/seminar/AGNTISTA>



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