

1141-55-27

**Michael Robinson\***, 220 Don Myers Building, American University, 4400 Massachusetts Ave NW, Washington, DC 20016. *Consistency filtrations of assignments to sheaves.*

Because sheaves model consistency relationships between local data, they are easily assembled from detailed models of systems. Being topological in nature, sheaves mediate local-to-global inference. By incorporating local geometry from the start, the global "fit" between local data and models can be quantified, which supports robust inferences about missing or inaccurate data. But since sheaf theory encourages abstraction, sheaves may provide topological invariants that govern model selection, the bias-variance tradeoff, and ultimately the problem of overfitting. This talk will formalize and unify these ideas using the consistency filtration associated to a sheaf of pseudometric spaces and an assignment of data. As a filtration, it has persistence properties – both functorial and geometric – since persistence is one source of strong properties for arbitrarily thresholded data. (Received June 28, 2018)