1124-55-336 **Ezra Miller*** (ezra@math.duke.edu). *Data structures for real multiparameter persistence.* Preliminary report.

Biological data, such as the images of fruit fly wing veins that drive the ongoing investigations reported in this talk, generate persistent homology with multiple parameters each of which varies continuously. Statistical analysis of persistence in this context presents fundamental challenges, such as how to encode persistence summaries for automatic computation and how to carry out statistical analyses with the summaries—theoretically and algorithmically—particularly in view of nontrivial moduli for multiparameter persistence diagrams. This talk presents an algebraic and geometric framework that renders these challenges surmountable while also clarifying the topological interpretation of each multiparameter persistence summary. The framework is new and useful already for two discrete parameters but works equally well for continuous parameters, or even for filtrations by arbitrary partially ordered sets. Joint work with David Houle (Biology, Florida State), Ashleigh Thomas (grad student, Duke Math), and Justin Curry (postdoc, Duke Math). (Received September 12, 2016)