## 1171-16-202 Brett Collins (b.collins@bucknell.edu) and David C Meyer\* (dcmeyer@colgate.edu). Rank of convex modules. Preliminary report.

Persistence modules are used in topological data analysis (TDA) to try to distinguish the legitimate topological features of a data set from noise. Because algebraically persistence modules are nothing more than representations of posets, using (bound) quivers and their representations is essential in TDA. While many different posets have a physical interpretation in the literature, of particular interest are convex (or interval) persistence modules, which correspond to those modules which can be uniquely determined from their support. In this talk we define for a poset P, an integer-valued function on the collection of a convex modules for P analogous to the characters of a group. These rank characters can be used to separate a direct sum of convex modules into its barcode by matrix multiplication. They also provide a one-sided test which can be used to determine if a module has only convex summands. (Received August 10, 2021)