1135-55-1754   **Killian Meehan** and **David C Meyer*** (`meyerdc@missouri.edu`). *Generalized persistence modules and taking limits.*

Generalized persistence modules are used in topological data analysis to distinguish noise from the legitimate topological features of a finite data set. From an algebraic perspective, generalized persistence modules are finitely-generated modules for a poset algebra. We prove an algebraic analogue of the isometry theorem of Bauer and Lesnick for a large class of posets. This theorem shows that for such posets, the interleaving metric of Bubenik, de Silva and Scott can be realized as a bottleneck metric which incorporates some algebraic information. In addition, when two generalized persistence modules come from data, we associate to them a directed set of algebras over which they can be compared. We recover their classical interleaving distance by taking limits. (Received September 24, 2017)