1160-13-34 **Nicholas R Baeth*** (nicholas.baeth@fandm.edu) and **Daniel Smertnig** (daniel@smertnig.at). *Lattices over Bass Rings and Graph Agglomerations.*

A commutative ring R is a *Bass ring* if it is noetherian, reduced, has module-finite integral closure, and every ideal of R is 2-generated. To study direct-sum decompositions of finitely generated torsion-free modules over Bass Rings, we study the arithmetic of the semigroup $\mathcal{T}(R)$ of isomorphism classes of modules with operation induced by the direct sum.

To a Bass ring R we associate the graph $\mathcal{G}_R = (V, E, r)$ of *prime ideal intersections* with set of vertices the minimal prime ideals of R, and an edge between two minimal prime ideals $\mathfrak{p}$ and $\mathfrak{q}$ for every maximal ideal containing both $\mathfrak{p}$ and $\mathfrak{q}$. An *agglomeration* on $\mathcal{G}_R$ is an assignment $a\colon V \cup E \to \mathbb{N}_0$ such that $a(v) \geq a(e)$ whenever a vertex v is incident with an edge e. The *monoid of agglomerations on* $\mathcal{G}_R$, denoted $\mathbf{A}(\mathcal{G}_R)$, is the additive submonoid of $\mathbb{N}_0^{V \cup E}$ consisting of all agglomerations on $\mathcal{G}_R$.

We construct a transfer homomorphism from $T(R)$ to $\mathbf{A}(\mathcal{G}_R)$, study the arithmetic of this simpler object, and pull the information back to obtain results about the nonuniqess of direct-sum decompositions over R. (Received July 29, 2020)