

Generalized Matrix Artin algebras

In this talk we discuss generalized matrix rings, that is matrix rings of the form:

$$\Lambda_{(\phi,\psi)} = \begin{pmatrix} A & {}_A N_B \\ {}_B M_A & B \end{pmatrix}$$

where A and B are rings, ${}_A N_B$ is an A - B -bimodule, ${}_B M_A$ is a B - A -bimodule, and $\phi: M \otimes_A N \rightarrow B$ and $\psi: N \otimes_B M \rightarrow A$ are bimodule homomorphisms. In case $\Lambda_{(\phi,\psi)}$ is an Artin algebra we call it a **generalized matrix Artin algebra**. Under some restrictions on ϕ and ψ we present some functorially finite subcategories of the module category of a generalized matrix ring. Also, under the same restrictions, we give some bounds for the global dimension. Finally, we investigate when a generalized matrix Artin algebra is Gorenstein and as an application we determine the Gorenstein-projective modules over the generalized matrix Artin algebra $\Delta_{(\phi,\phi)} = \begin{pmatrix} \Lambda & \Lambda \\ \Lambda & \Lambda \end{pmatrix}$, where Λ is an Artin algebra.

This is a joint work with Edward L. Green.
