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# Discrete Mathematics Seminar

Time:       Friday, September 7, 2018, 2:15 - 3:15 PM
Location:   330 Derrick Hall
Title:      Exponential Quivers & Incidence Hypergraphs
Speaker:    Dr. William Grilliette, Department of Mathematics, Texas State University

**Abstract:**

The notion of an exponential object serves as a categorical analogue to the set of functions from one fixed set to another. All presheaf topoi have an abstract construction of the exponential, including the categories $\mathfrak{Q}$ of quivers and $\mathfrak{R}$ incidence hypergraphs. However, the evaluation functors for $\mathfrak{R}$ are components of geometric morphisms, which substantially simplify the construction of an exponential hypergraph. Moreover, a natural functor from $\mathfrak{Q}$ to $\mathfrak{R}$ is also a component of a geometric morphism and intimately ties the exponential quiver to the exponential incidence hypergraph. Consequently, a concrete and explicit construction of the quiver exponential is given.