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## **Discrete Mathematics Seminar**

Time: Friday, October 4, 2019, 2:15-3:15 PM  
Room: 330 Derrick Hall  
Title: Box Products, Incidence Hypergraphs, and the Laplacian  
Speaker: Dr. William Grilliette, Department of Mathematics, Texas State University

### **Abstract:**

While the notion of a monoidal product first arose from consideration of the tensor product of modules in algebra, the concept is exemplified in graph theory by the box, strong, and lexicographic products. While a box product can easily be defined for incidence hypergraphs, the natural duality motivates the construction of the "Laplacian product". In this talk, the Laplacian product will be constructed and its deep connections to incidence duality, the Laplacian matrix, and the classical box product of multigraphs will be elucidated.