



Mathematics Department Colloquium  
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**Multi-Evolution Scattering Systems in Analysis and its Applications**

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*In 1987 Mischa Cotlar and I introduced scattering systems with a multi-evolution group. This notion was essential to extend our results in analysis and operator theory to multidimensional contexts. But as both the classical notions of Adamjjan-Arov and of Lax-Phillips scattering were developed for the wave equation (a one-evolution scattering), our multi-evolution systems were deemed of low interest. There is a well-known interplay between one-evolution scattering theory, conservative linear systems in engineering, operator model theory, and the theory of bounded analytic functions. The different types of conservative linear systems in several dimensions, and colligations in several variables have also been well-understood for a long time. In contrast to the one-dimensional case, multi-evolution scattering systems and multidimensional colligations and linear systems, need the passage of bounded analytic functions from the disk to the polydisk, and there the equivalence does not hold in general. In joint work with Ball and Vinnikov, we have shown that the cases of two or more dimensions differ substantially. Finally, I will mention new results obtained recently for rational functions on the bidisc, and a completely different way to pass from two to more dimensions. Some of the last results were obtained together with Ball, Kalyuzhnyi-Verbotvetskii, Vinnikov and Woerdeman.*

Lectures are in Korman Center 247 at 1:00 pm with refreshments preceding the talks at 12:30 pm, also in Korman 247. For additional information contact Greg Naber (Korman Center 255) at [gln22@drexel.edu](mailto:gln22@drexel.edu). Directions to Drexel University are available at [http://www.drexel.edu/em/directions/directions\\_uc.html](http://www.drexel.edu/em/directions/directions_uc.html).