



Mathematical Sciences 2025 Colloquium Series



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at El Paso.



September 12, 2025, at 3:00pm
Bell Hall, Room 130 and online
via Zoom *Scan the QR-code to access
the link.*



Optimal Warranty Region for Two-Dimensional Dependent Data

While purchasing a new car (almost any brand!) we often receive a warranty on failure either 60k miles or 3 years, whichever occurs earlier. In general, this is called a two-dimensional warranty. In this talk, we will answer the question: whether these two figures (60k/3Y) can be selected optimally from the manufacturer's perspective. The three most popular types of warranty policies are considered: free replacement warranty (FRW), prorated warranty (PRW), and combined FRW-PRW. The optimal warranty region is identified by optimizing a utility function. We propose and provide a mathematical interpretation of several potential choices of the associated warranty cost function as a component of the utility function. We analyzed a field-failure data set of 40 locomotive traction motors and found that a two-dimensional warranty cost function yields the highest utility compared to all other scenarios.

Hosted by: Dr. Emil Schwab

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