TEMPLE UNIVERSITY
Department of Mathematics

Applied Mathematics and Scientific Computing Seminar

Wednesday, 21 October 2015, 4:00 p.m.
Room 617 Wachman Hall

(refreshments and social at 3:45 p.m)

The Infinite Dimensional Stochastic LQR Problem: Theory and Numerical Approximation

by Hermann Mena
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Abstract. We consider the stochastic linear quadratic regulator (SLQR) control problem on Hilbert spaces. For a well-posed SLQR problem, the optimal control is given in terms of a stochastic Riccati equation. Existence and uniqueness of the solutions are available only for certain special cases. We develop a stochastic treatment of unbounded control action problems arising in a general class of dynamical systems which exhibit singular estimates, but are not necessarily analytic. We also investigate the numerical treatment of the SLQR problem, in particular, the convergence of the Riccati operators. In addition, we discuss efficient numerical methods for solving large-scale stochastic Riccati equations arising from the discretization.