1116-49-2902      **Drew P Kouri\*** (`dpkouri@sandia.gov`), PO Box 5800, MS 1320, Sandia National Laboratories, Albuquerque, NM 87125. *A Data-Driven Approach to PDE-Constrained Optimization Under Uncertainty.* Preliminary report.

In engineering optimization problems the true physical parameters are often unknown and estimated from data. For many applications it is critical that the optimal solutions are, in some sense, robust to this uncertainty. In this talk, I will present a distributionally robust approach that incorporates data in PDE-constrained optimization. First, I will develop a data-driven discretization for the unknown probability measures of PDE parameters and prove rigorous error bounds for this discretization. I will then formulate a robust optimization problem which accounts for the uncertainty in the estimated probability measures. I will conclude with a discussion of potential algorithms and preliminary numerical results. (Received September 23, 2015)