

# *The Department of Statistics & Actuarial Science*



## **COLLOQUIUM- SPRING 2015**



**ASSISTANT  
PROFESSOR  
QIHANG LIN  
UNIVERSITY OF IOWA**

### **Title: “An Accelerated Proximal Coordinate Gradient Method and its Application to Regularized Empirical Risk Minimization”**

**Abstract:** We consider the problem of minimizing the sum of two convex functions: one is smooth and given by a gradient oracle, and the other is separable over blocks of coordinates and has a simple known structure over each block. We develop an accelerated randomized proximal coordinate gradient (APCG) method for minimizing such convex composite functions. For strongly convex functions, our method achieves faster linear convergence rates than existing randomized proximal coordinate gradient methods. Without strong convexity, our method enjoys accelerated sublinear convergence rates. We show how to apply the APCG method to solve the regularized empirical risk minimization (ERM) problem, and devise efficient implementations that avoid full-dimensional vector operations. For ill-conditioned ERM problems, our method obtains improved convergence rates than the state-of-the-art stochastic dual coordinate ascent (SDCA) method.

**April 9, 2015**

**Reception at 3:00 p.m., 241-B Schaeffer Hall**

**Talk at 3:30 p.m., 61 Schaeffer Hall**