Abstract
There are very few problems that can match least squares problem in terms of ubiquity of applications. When the
data is large, or comes in a streaming way, randomized iterative methods, such as Randomized Kaczmarz method,
provide a truly efficient way to compute the least squares solution. However, if the data is corrupted with
arbitrarily large sparse errors, one can expect the iterates to be diverted far from the solution with each corrupted
equation they encounter. To conquer this issue, we recently proposed robust versions of Randomized Kaczmarz
and Stochastic Gradient Descent methods that manage to avoid harmful corrupted equations by exploring the
space as they proceed with the iterates. I will also discuss how to use the information obtained on the exploration
phase efficiently, and what structural characteristics of the data matrix are crucial for such methods. Based on the
joined work with Deanna Needell, Jamie Haddock, and Will Swartworth.

Bio
Liza Rebrova is an Assistant Professor at Princeton University ORFE department. Her Ph.D. is from the University of
Michigan, and after that she worked an Assistant Adjunct Professor at UCLA and as a postdoctoral scholar at
Lawrence Berkeley National Lab. She is an applied mathematician working in high-dimensional probability,
randomized numerical algorithms, and low-rank matrix and tensor data processing.

Zoom details can be found at: https://stt.natsci.msu.edu/stt-colloquium-zoom-info/

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