Statistics 552: Asymptotic Theory
MW 9-10:30am @ JMH F38

Professor: T. Tony Cai, tcai@wharton.upenn.edu, Office: JMH 469.
Office hour: Wednesday 1:00-2:00pm.

References:

- Additional papers and lecture notes will be given later.

The course begins with the classical asymptotic theory. Topics include Information Inequality, delta method, variance-stabilizing transformation, Edgeworth expansion, and their applications. Asymptotic properties of the MLE and superefficiency will be covered.

The second part of the course is on high dimensional inference. Topics include detection of sparse signals, largest-scale multiple testing, compressed sensing/high-dimensional linear regression, and statistical inference on high-dimensional covariance structure. In particular, $\ell_1$ minimization methods (Dantzig Selector and Lasso) and covariance matrix estimation are analyzed in detail. Both upper bound and lower bound techniques will be discussed.

Homework: There will be occasional homework assignments.

Presentation: Students are expected to give a presentation near the end of the semester.

Exam: There will be no exam.