



HARVARD UNIVERSITY
17 Oxford Street
Cambridge, MA 02138

Mathematical Picture Language Seminar



Tuesday, October 31

9:30 a.m. Boston time

Jefferson 453

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Yale University

Discrepancy Theory and Randomized Controlled Trials

Abstract: Discrepancy theory tells us that it is possible to partition vectors into sets that look surprisingly similar to each other. By "surprisingly similar" we mean much more similar than the sets produced by a random partition. Randomized Controlled Trials are used to test the effectiveness of interventions, like medical treatments and educational innovations. Randomization is used to ensure that the test and control groups are probably similar. When we know nothing about the experimental subjects, a random partition into test and control groups is the best choice. When we do have prior information about the experimental subjects, we can combine the strengths of randomization with the guarantees of discrepancy theory. This allows us to obtain more accurate estimates of the effectiveness of treatments, or to conduct trials with fewer experimental subjects. I will survey some fundamental results in discrepancy theory, present a model for the analysis of RCTs, and summarize results from my joint work with Chris Harshaw, Fredrik Sävje, and Peng Zhang.



Zoom QR Code & Link:

<https://harvard.zoom.us/j/779283357?pwd=MitXVm1pYUIJVzZqT3lwV2pCT1ZUQTog>

<https://mathpicture.fas.harvard.edu/seminar>