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\* **Princeton Discrete Math Seminar** \*  
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Date: Wednesday, November 10, 2:30 in Fine Hall 224

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**Analysis of Boolean Functions**  
**and (a small sample of) its Applications**

**Abstract**

Representing a Boolean function as a polynomial is only natural. It turns out that this representation, along with some related technology – for example the study of the Influence of variables on Boolean functions – gives insight to many aspects of such functions. This field was founded in a paper by Kahn, Kalai and Linial from the end of the 80’s, and has since shown applications in a wide array of fields, including Game Theory and Social Choice, Economics, Percolation, and Complexity theory.

The talk will survey the methodology and some of its applications, to Mechanism Design, Graph Properties and Complexity Theory. We would then consider some further applications, show the state of art in terms of known results in the field; and suggest open problems with their relevant applications.