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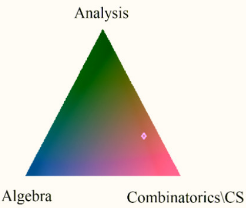
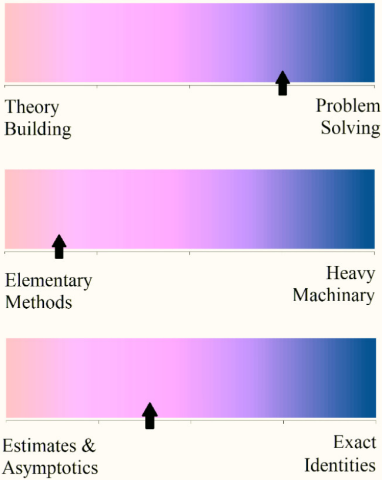
Keywords: Gaussian Functions, Moment methods, Discrete stochastic processes, Discrepancy





Things we may discuss

- (Stationary) Gaussian Processes: zeroes, persistence, large deviations (works with N. Feldheim, S. Mukherjee, S. Nitzan, F. Nazarov, B. Jaye).
- Random matrices and random operators: counting weighted paths (works with S. Sodin, O. Zeitouni, E. Paquette).
- Scaling limit of discrete stochastic processes (related to works with O. Gurel-Gurevich, A. Ramdas, N. Bansal).

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Open problem: Let C_n be a cycle of length $2n$. Consider the following dynamics on $f_t : C_n \to \mathbb{Z}$ initialized at 0. At every time step look at f_t of a random $x \in [n]$

- if $f_t(x) \leq 0$ then $f_{t+1}(x) += 1, f_{t+1}(x-1) -= 1$.
- if $f_t(x) > 0$ then $f_{t+1}(x+1) += 1, f_{t+1}(x) -= 1$.

Is it true that this converges, after proper scaling to BM on the circle? Can you at least show fluctuation of at least n^{ϵ}?