	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
9:30 -- 10:30	MC1 = MiniCourse 1 **Renan Gross** No1	MC3 **Noam Lifshitz** No1	MC2 - **HV** No2	MC1 - **RG** No3	MC3 - **NL** No3
10:30 -- 10:45 coffee					
10:45 -- 11:45	MC2 **Hugo Vanneuville** No1	MC1 - **RG** No2	MC3 - **NL** No2	MC2 - **HV** No3	**Pál Galicza:** Sparse reconstruction in spin systems
11:45 -- 12:30	**Jan Swart:** Pathwise duality for monotone interacting particle systems	**Ágnes Cs. Kúsz:** The diameter of random spanning trees interpolating between the UST and the MST of the complete graph	**Raphael Rossignol:** Noise sensitivity for critical Erdös-Rényi random graph	**Mathew Roberts:** Exceptional times of the critical dynamical Erdős-Rényi graph	**Balázs Ráth:** The window process of slightly subcritical frozen percolation
LUNCH					
2:15 -- 3:00	**Gady Kozma:** A reduction of the theta(p_c) problem to a correlation inequality	**Johan Jonasson:** Noise Sensitivity of Deep Neural Networks	A guided tour in Budapest (optional :-)) Meeting at 2:30 in front of the lecture hall	**Malo Hillairet:** Concentration in dynamical percolation	
3:00 -- 3:45	**Gidi Amir:** Dynamical noise sensitivity of the voter and the campaign models	**Subhajit Gosh:** Noise Sensitivity Governed by continuous-time Random Transposition Walk		**Rangel Baldasso:** Fluctuations lower bounds for random walks in random environments via RSW	
3:45 -- 4:15 Coffee					
4:15 -> 5:00	Open Problem Session // wine-and-cheese party	**Ritvik Radhakrishnan:** Quantitative FKG for crossings	Turkish outdoor bath (optional :-)) Széchenyi bath, from around 4:30 or 5:00.		
5:00 -> 6:00					
7:00 ->		Workshop Dinner at VígVarjú			

Gidi Amir (Bar-Ilan University**):**
Dynamical noise sensitivity of the voter and the campaign models

Rangel Baldasso (PUC Rio):
Fluctuations lower bounds for random walks in random environments via RSW

Pál Galicza (Rényi Institute):
Sparse reconstruction in spin systems

Subhajit Ghosh (Bar-Ilan University):
Noise Sensitivity Governed by continuous-time Random Transposition Walk

Abstract: In this talk, we focus on the Boolean functions on the symmetric group. The noise source is the continuous-time random transposition walk on the symmetric group. First, we state equivalent criteria for noise sensitivity and noise stability; these involve the Fourier transformation of the given function at irreducible representations (of the symmetric group). We use them to study the sensitivity/stability nature of some Boolean functions, viz., the parity function, the dictator function, and the indicator of the set of permutations with ``long'' cycles. Finally, we give a sufficient condition for noise sensitivity involving the influence of transposition on the given Boolean function. The techniques used in this talk are based on the representation theory of the symmetric group.

Renan Gross (Tel Aviv University):
Discrete analysis with continuous processes

1. Introduction to Boolean analysis and stochastics
2. Fractional decision trees and the axis-aligned Laplacian
3. Functional inequalities using a Poisson jump process

Malo Hillairet (ENS Lyon):
Concentration in dynamical percolation

Johan Jonasson (Chalmers University of Technology):
Noise Sensitivity of Deep Neural Networks

Gady Kozma (Weizmann Institute of Science):
A reduction of the \theta(p_c) problem to a correlation inequality

Abstract: We conjecture a new correlation inequality for percolation and support our conjecture with some (limited) computer simulations and some special cases that we can prove. If the correlation inequality indeed holds, the conjecture that there is no percolation at the critical value at dimension 2 and above will follow. Joint work with Shahaf Nitzan.

Ágnes Cs. Kúsz (TU Budapest and Rényi Institute):
The diameter of random spanning trees interpolating between the UST and the MST of the complete graph

We introduce WST_{beta_n}(K_n) as the weighted spanning tree of the complete graph K_n w.r.t. the random electric network of conductances exp(-\beta_n U_e) with U_e's being i.i.d. Unif[0,1] labels of the edges. Moving from \beta_n=0 to faster and faster growing \beta_n's, the model interpolates between the uniform and the minimum spanning trees: WST_0(K_n)=UST(K_n), and if \beta_n grows fast enough, then typically WST_{\beta_n}(K_n)=MST(K_n).

We have determined the following phases of the model:
1. For 0<\beta_n<n / \log n, Diam(WST_{\beta_n}(K_n)) grows like n^{1/2+o(1)}). In this case, our random electric network has isoperimetric expansion.
2. For any \eps>0 and n^{4/3+\eps} < \beta_n < n^{2-\eps}, typically WST_{\beta_n}(K_n) \not=MST(K_n), but Diam(WST_{\beta_n}(K_n)) grows like Diam(MST(K_n)) = \Theta(n^{1/3}).
3. For any \eps>0 and n^{2+\eps} < \beta_n<n^{3-\eps}, although typically WST_{\beta_n}(K_n)=MST(K_n), the Aldous-Broder algorithm and Prim's invasion algorithm generating these models are different.
4. For any \eps>0 and \beta_n> n^{3+\eps}, typically WST_{\beta_n}(K_n)=MST(K_n), since even the Aldous-Broder algorithm and Prim's invasion algorithm make the same steps.

Noam Lifshitz (Hebrew University):
The synergy between hypercontractivity and representation theory

Abstract: A recently fertile strand of research in Group Theory involves developing non-abelian analogues of classical combinatorial results for arithmetic Cayley graphs. This includes the exploration of properties such as growth, expansion, mixing, diameter, etc. While remarkable progress has been made in the case of normal Cayley graphs (those generated by unions of conjugacy classes) through character theory, the general case remains poorly understood. In this mini-course, I will provide a gentle introduction to our method, which is based on synergizing hypercontractive inequalities in conjunction with dimensional lower bounds from representation theory. Our approach allows us to obtain qualitative generalizations of several results on normal Cayley graphs.

One notable success of our theory is the full resolution of the 1985 Babai--Sos problem on product-free sets in alternating groups. Additionally, our theory has been applied in a series of papers to make progress on various other open problems related to sets that are not too sparse. These include analogues of Polynomial Freiman-Ruzsa, Bogolyubov’s lemma, Roth’s theorem, the Waring problem, essentially sharp estimates for the diameter problem of Cayley graphs over alternating groups whose density is at least exponential in −n, optimal product mixing in compact Lie groups with applications to quantum communication complexity, and bounds on sizes of products of conjugacy classes of alternating groups.

This work is based on joint collaborations with Keevash; Keevash and Minzer; Keller and Sheinfeld; Arunachalam and Girish; Evra and Kindler; and Ellis, Kindler, and Minzer.

Ritvik Radhakrishnan (ETH Zürich):
Quantitative FKG for crossings

Abstract: Consider critical Bernoulli bond percolation on \mathbb{Z}^2. We show that the two arm exponent is strictly larger than twice the one arm exponent. This answers a question of Schramm and Steif (2010), and shows that their proof of the existence of exceptional times on the triangular lattice also applies to the square lattice. We use an interpolation formula via noise to obtain asymptotic correlation of crossings and apply this at each scale to obtain the strict inequality of arm exponents. This talk is based on joint work with Vincent Tassion.

Balázs Ráth (TU Budapest and Rényi Institute):
The window process of slightly subcritical frozen percolation

Abstract: The mean field frozen percolation process is a dynamic random graph model which starts with the empty graph on N vertices, an edge between a pair of vertices is added at rate 1/N and connected components of size k are deleted at rate r * k, where r = r(N) is a constant that depends on N. This model is known to exhibit self-organized criticality when 1 << N and 1/N << r(N) << 1, i.e., the dynamics keep the graph in a state which is essentially a near-critical critical Erdős-Rényi graph. One defines the window process w(t) = A(t) * t / N, where A(t) is the number of vertices alive at time t. We derive scaling limits for the time evolution of w(t) when r(N) = n^a for some -1/3 < a < 0, thus giving a detailed picture of the mechanism that produces the self-organized criticality of the model. Joint work with Márton Szőke (BME) and Dominic Yeo (King's College London).

Matt Roberts (University of Bath):
Exceptional times of the critical dynamical Erdős-Rényi graph

Abstract: It is well known that the largest components in the critical Erdős-Rényi graph have size of order n^{2/3}. We introduce a dynamic Erdős-Rényi graph by rerandomising each edge at rate 1, and show that there exist times in [0,1] at which the largest component is significantly larger than n^{2/3}.

Raphael Rossignol (Université Grenoble):
Noise sensitivity for critical Erdős-Rényi random graph

Abstract: Lubetzky and Peled proved in 2022 noise sensitivity for the Erdös-Rényi random graph (inside the critical window for percolation on the complete graph) subject to resampling of its edges. I will describe another point of view leading to the same results, based on the convergence of the dynamical percolation process itself. This limiting process can be described as a coalescence and fragmentation process on the scaling limit of the random graph, and noise sensitivity boils down to the extremality of the coalescent process alone. The presentation is based on works by myself and the PhD of Nicolas Frilet.

Jan Swart (UTIA Prague):
Pathwise duality for monotone interacting particle systems

Abstract: Motivated by open problems for an extension of the contact process that also involves cooperative branching, I will discuss interacting particle systems that can be constructed from a graphical representation involving monotone local maps. Given such a graphical representation, the state at the origin at a later time is a random monotone boolean function of the initial configuration of zeros and ones. Looking backwards in time, this random boolean function evolves as a Markov process. I will discuss the upper invariant law of this Markov process as well as its mean-field limit. This is based on joint work with Jan Niklas Latz, Tibor Mach, and Anja Sturm.

Hugo Vanneuville (Université Grenoble):
Noise sensitivity, percolation and the pivotal overlap

1. Noise sensitivity and the pivotal set
2. Noise sensitivity of percolation
3. Noise sensitivity away from the independent case: the Ising model