Abstracts Eurandom workshop:

Interacting particles in the continuum

INHOUD

ABSTRACTS (ALPHABETICAL ORDER)

FABRICE BAUDOIN

TITLE: STOCHASTIC AREA FUNCTIONALS

Abstract: The celebrated Levy's stochastic area formula is certainly one of the most beautiful formulas in stochastic calculus. It somewhat surprisingly useful in a wide variety of settings that include sub-Riemannian geometry and rough paths theory. In this talk we will present generalizations of the formula in different geometric settings: the sphere, the hyperbolic space and then some spaces of matrices.

The talk will be based on a forthcoming research monograph written in collaboration with N. Demni (University NYU Abu Dabi) and Jing Wang (Purdue University).

CHIARA BOCCATO

TITLE: GROUND STATE PROPERTIES OF THE INTERACTING BOSE GAS

Abstract: The interacting Bose gas is a system in quantum statistical mechanics where complex collective behavior emerges from the underlying many-body theory, posing crucial challenges to its rigorous mathematical description.

In recent years, progress has been made in understanding its ground state properties; in certain scaling limits it has been possible to prove the occurrence of the Bose-Einstein condensation phase transition and to obtain expressions for the excitation spectrum, justifying the linear dispersion relation predicted by Bogoliubov. For the description of disordered materials it is crucial to understand whether similar properties are stable in presence of randomly placed impurities. We show that for a suitably rescaled interactions and in presence of Poisson distributed impurities (Kac--Luttinger model), Bose-Einstein condensation occurs into the minimizer of a Hartree-type functional.

FRANCESCO CASINI

TITLE: DUALITY (AND INTEGRABILITY) FOR THE MULTI-SPECIES STIRRING PROCESS WITH OPEN BOUNDARIES

To construct a model for non-equilibrium statistical mechanics, the system is typically brought into contact with two thermodynamic baths, referred to as boundary reservoirs. These reservoirs impose their own density of particles at the system's boundary, generating a current. In the long-time limit, a non-equilibrium steady state sets in,

characterized by a stationary value of the current. Currently, there is a growing interest for multi-component systems, i.e. models where many different species of particle (sometimes called colours) are present. In this setup, in addition to the occupation of available empty sites, interactions between different species become possible.

Starting from the models explored in [1]-[2], this presentation focuses on the boundary-driven multispecies stirring process on the geometry of a general connected graph. This process is a natural extension of the symmetric exclusion process (SEP) when multiple species of particles are considered. Its dynamics involve the exchange of positions between a particle and a hole or between two colours of particles, both occurring at a rate of 1. In addition to this 'bulk' dynamics, the system is put in contact with boundary reservoirs that inject, remove and exchange type of particles. After describing the process's generator using a suitable representation of the gl(N) Lie algebra, we establish the existence of an absorbing dual process de_ned on an enlarged graph, in which each boundary reservoir is replaced by an absorbing extra-site. This dual process shares the same dynamics in the bulk, but the extra-sites absorb particles voiding the graph in the long time horizon. Considering the integrable version (on a chain with hard-core exclusion) of the multi-species stirring process, we combine absorbing duality and the matrix product ansatz (that was proven in [1]) to derive closed expressions for the non-equilibrium steady-state multi-point correlations of the process. Consequently, we formulate exact expressions for the non-equilibrium steady state.

Finally, we discuss some extensions to the non-integrable chain.

This presentation is based on the recent joint work with Rouven Frassek and Cristian Giardinà [3]

DAVID DEREUDRE

TITLE: GIBBS POINT PROCESSES WITH NON-SUMMABLE PAIRWISE INTERACTION

Abstract: In this talk, we discuss the question of Gibbs point processes in $\mathbb{R}^d$ with pairwise interactions that are not integrable at infinity. A standard example is the Riesz potential of the form $\varphi(x)=\frac{1}{|x|^s}$ *s* where $stid$. This setting has a long history, notably because the case $s=d-2$ corresponds to the classical Coulomb potential, which arises from electrostatic theory. We will first address the existence of the process in the infinite volume regime when a neutralizing background is introduced (this model is known as Jellium in theoretical physics). Subsequently, we will discuss the rigidity of such point processes, specifically hyper-uniformity and number rigidity. We will provide a state-of-the-art review and present numerous conjectures and open problems.

CHRISTOF KUELSKE

TITLE: WIDOM-ROWLINSON MODELS IN RANDOM ENVIRONMENTS: JOINT MEASURES AND THEIR LOCALITY (AND NON-LOCALITY) PROPERTIES

Abstract: In the Widom-Rowlinson model in Euclidean space, particles which carry either a plus or a minus sign interact via a hardcore constraint which forbids particles of opposite sign to become close. We consider such Widom-Rowlinson models in quenched random environments. These random environments model various types of substrates on which Widom-Rowlinson particles may sit. We are then interested in locality properties of the joint measures of environment process and quenched WiRo-particle measures. We show that these joint measures display transitions between a local behavior (which happens at low density of WiRo-particles), and non-local behavior. This happens in ways which depends on the type of environment.

This is joint work together with Benedikt Jahnel and Alexander Zass, see arXiv: 2311.07146.

It is the first of two talks on this issue at our meeting and will be followed by the related talk by Alexander Zass.

SABINE JANSEN

TITLE: INTERTWINING FOR INTERACTING PARTICLE SYSTEMS IN THE CONTINUUM:

Abstract: Several interacting particle systems on lattices have duality functions that are products of single-site duality functions. How can we generalize this structure to the continuum? In talk 1 explain how infinite-dimensional orthogonal polynomials known in non-Gaussian white noise and chaos decompositions for Lévy random fields enter the scene and how to formulate intertwining relations. In talk 2, I comment on relations the algebraic approach and give two probabilistic representations of the su(1,1) current algebra. This brings in negative binomial point processes, Gamma random measures, measure-valued processes, and spatial birth-death processes.

Based on joint works with Simone Floreani, Frank Redig and Stefan Wagner.

JONATHAN JUNNÉ

TITLE : THE SYMMETRIC EXCLUSION PROCESS ON COMPLETE RIEMANNIAN MANIFOLDS

Abstract : We introduce the Symmetric Exclusion Process (SEP) on an increasing sequence of proximity graphs drawn from Poisson point processes (PPP) with Gibbs intensity. As the intensity of the (PPP) increases, the empirical density of the (SEP) evolves according to a diffusion whose drift is induced by the choice of potential for the Gibbs measure; this is the hydrodamic limit. We also lift the sequence of proximity graphs to principal bundles and deduce horizontal diffusions as hydrodynamic limits.

JONAS KOEPPL

TITLE: SYNCHRONISATION AND TIME-PERIODIC BEHAVIOUR IN INTERACTING PARTICLE SYSTEMS

Abstract: Perhaps the simplest way in which a Markov process can fail to be ergodic is if the system has a periodic law, i.e., a law that has the property that, if the system at time zero is distributed according to this law, then it returns to this law after a finite time $T>0$, but the system has a different distribution at all intermediate times $0 ti t ti T$. While it is not so hard to show that this behaviour cannot happen in continuous-time Markov chains on finite state spaces, the situation for spatially extended interacting particle systems on the infinite lattice $\Z^d$ is much more delicate and very little is known rigorously about interacting particle systems with periodic laws.

While classical results due to Mountford and Ramirez—Varadhan guarantuee that one-dimensional IPS with finite-range interactions cannot have periodic laws, we construct a class of examples of non-degenerate IPS which exhibit time-periodic behaviour in any dimension $d\geq1$. After explaining the construction, we also discuss the gap left between the classical results and our counter examples.

RICHARD KRAAIJ

TITLE: WELL POSEDNESS FOR HAMILTON-JACOBI EQUATIONS FOR STOCHASTIC CONTROL PROBLEMS: A NEW VIEW ON THE CLASSICAL APPROACH USING COUPLING

Abstract: Stochastic control problems for controlled Markov processes can be infinitesimally characterized using a second order Hamilton-Jacobi-Bellman (HJB) equation (e.g. via the well known martingale problem).

The classical work of Crandall-Ishii-Lions (1992) establishes how to obtain uniqueness of viscosity solutions for controlled diffusion processes, and a collection of recent works has pushed the estimates to include first simple classes of spatially inhomogeneous controlled Lévy processes.

We introduce a new perspective of the classical proof methods in terms of Markovian couplings, enabling the extendion of the applicability to a wider range of Lévy type processes and paving the pay for extensions to new contexts.

Based on joint work (in progress) with Serena Della Corte (Delft), Fabian Fuchs (Bielefeld) and Max Nendel (Bielefeld).

TEIJE JOHAN KUIJPER

TITLE: THE ASYMPTOTIC WINDING NUMBER OF A BROWNIAN LOOP ON THE HOPF AND ANTI-DE SITTER FIBRATIONS

Abstract: In this talk we investigate the distribution of the winding number of a Brownian loop on different principal S^1-bundles and study its asymptotics as the length of the loop goes to infinity. The principal S^1-bundles we are interested in are the complex projective line minus two points, the complex hyperbolic line minus one point, the Hopf fibrations and the anti-de Sitter fibrations. This study is partly motivated by the general rule that the asymptotics of an 'infinite Brownian loop' capture more of the geometry at infinity of a Riemannian manifold than the asymptotics of Brownian motion itself.

ALEXANDER PAUL LEWIS

TITLE: CONVERGENCE RATES OF THE GEODESIC LANGEVIN ALGORITHM TO SDEs ON MANIFOLDS

Abstract: In the past few years there has been a surge in interest in sampling from probability measures on Riemannian manifolds by the Euler discretization of the overdamped Langevin diffusion. However, rates for weak convergence of the algorithm have not yet been proved without a reliance on embedding the manifold into a high dimensional copy of Euclidean space. In this talk, I will introduce the Riemannian Langevin algorithm via the exponential map and provide explicit rates of convergence in finite time and to the stationary distribution of the corresponding SDE in terms of the timestep h and terminal time T when M is compact. I will also give an analysis of the case when M is non-compact and propose necessary assumptions to guarantee convergence of the algorithm to the stationary distribution. I will discuss the extension to retractions and suggest some conditions on the retraction to ensure we obtain a correct

order of convergence. Finally, I propose convergence rates of the algorithm for a time-dependent metric. This talk is based upon the preprint: Sampling and estimation on manifolds using the Langevin diffusion

This is joint work with Karthik Bharath, Akash Sharma, and Michael Tretyakov.

MIRMUKHSIN MAKHMUDOV

TITLE: THERMODYNAMIC FORMALISM FOR A NOVEL CLASS OF POTENTIALS

Abstract: One-dimensional long-range models have captured considerable attention within the Statistical Mechanics community, especially since F. Dyson demonstrated the phase transition behaviour for long-range Ising models in the low-temperature regime [1]. In 2017, A. Johansson, A. ¨Oberg, and M. Pollicott established that the Dyson model on the half-line lattice (Z+) exhibits a phase diagram similar to Dyson's classical model on (Z). In this talk, I discuss the relationship between half-line and whole-line (classical) Gibbs states for one-dimensional systems in a general setup. Notably, the findings discussed apply to both ferromagnetic and antiferromagnetic Dyson models. Consequently, our results extend beyond the scope of Johannsson, ¨Oberg, and Pollicott, who only considered the ferromagnetic model with fast-decaying interaction energy ($\alpha > 3/2$) [3]. Additionally, the talk addresses the problem of the existence and regularity of the primary eigenfunction of the Perron-Frobenius transfer operator for potentials that fall outside the studied classes in Thermodynamic Formalism.

The talk is based on a recent paper [2].

[1] F. J. Dyson, Comm. Math. Phys. 12, 91–107 (1969).

[2] A.C.D. van Enter, R. Fern´andez, M. Makhmudov, E. Verbitskiy, arXiv:2404.07326, (2024).

[3] A. Johansson, A. ¨Oberg, M. Pollicott, arXiv:2304.04202v1, (2023).

MORITZ OTTO

TITLE: DISAGREEMENT COUPLINGS AND LIMIT THEOREMS FOR GIBBS POINT PROCESSES

Abstract: I will start with an introduction of disagreement couplings for Gibbs processes in the continuum and discuss underlying Poisson embeddings. In their easiest form, disagreement couplings allow us to control the total variation distance of two coupled

Gibbs processes on a bounded domain with different boundary conditions. This technique has recently turned out to be useful in establishing existence and uniqueness results for Gibbs processes dominated by a Poisson process. In this talk, the focus will be on the role of disagreement couplings in proving Poisson and central limit theorems for functionals of Gibbs processes. Combined with powerful estimates obtained by Stein's method, our asymptotic statements hold for interaction ranges up to the percolation threshold of the dominating Poisson process.

The talk is based on joint work with Günter Last, Christian Hirsch and Anne Marie Svane.

PIERRE PERRUCHAUD

TITLE: CONSTRUCTIVE QUANTUM FIELD THEORY: AN APPROACH VIA THE BROWNIAN LOOP SOUP

Abstract: In the standard model of particle physics, the main mathematical protagonists are sections of vector bundles (modelling e.g. the electron field) and connections on these bundles (modelling e.g. the electromagnetic potential). We will introduce these objects, and discuss a simplification of this model which, to the extent of our current understanding, reduces to the construction of a specific probability measure on a space of pairs (section,connection).

Our main contribution, and the bulk of the talk, is a rewriting of some physical observables in terms of the so-called Brownian Loop Soup. We will shy away from proofs, focussing instead on introducing and providing intuition for gauge theory, the Brownian Loop Soup, and the phi four model.

Joint work with I. Sauzedde

ELENA PULVIRENTI

TITLE: MICROSCOPIC FLUCTUATIONS FOR THE CRITICAL DROPLET OF THE WIDOM-ROWLINSON MODEL

Abstract: In this talk, I will discuss properties of the two-dimensional Widom-Rowlinson model on the torus. This model describes fluids where particles are represented as unit discs that can overlap and dynamically appear or disappear according to heat-bath dynamics. The interaction between particles is governed by the overlap of their discs. In studying the metastability of this Markov process, a key object to identify is the critical droplet for the crossover, which corresponds to the set of macroscopic states representing the saddle points for the condensation.

We show that the critical droplet closely resembles a disc of a specific deterministic radius, and we analyze the microscopic fluctuations of its surface. Furthermore, we show that, in the low-temperature limit, the law of the surface of the critical droplet in the Widom-Rowlinson model converges to the law of the surface in a circular version of a new microscopic model, which we call the parabolic interface model. This model is a Gibbs modification of what is known in stochastic geometry as the paraboloid hull process.

Based on joint works with Frank den Hollander (Leiden), Sabine Jansen (Munich) and Roman Kotecky (Prague).

CHRISTOPHER RENAUD CHAN

TITLE: LIQUID-GAS PHASE TRANSITION FOR GIBBS POINT PROCESS WITH SATURATED INTERACTON.

Abstract: Gibbs point processes are natural objects to study systems of particles in interaction. In finite volume, the unnormalised density of the Gibbs measure with respect to a Poisson point process with activity z is given by the Boltzmann factor $e^{-\beta H}$, where β is the inverse temperature and H is the Hamiltonian that encodes the interaction between particles. The infinite volume Gibbs point processes are defined as solutions to the Dobrushin-Lanford-Ruelle equations, which describe the equilibrium of the system. A liquidgas phase transition occurs when we do not have uniqueness of the infinite volume Gibbs point process and that they have different densities. We explore the occurrence of such phenomenon in the context of saturated interactions. These interactions represent a class of models where the energy cost of adding a point in areas of high particle density is constant. The Quermass interaction exhibits such saturation property. We will present another interesting example: the diluted pairwise interaction. Under some assumptions, we prove the existence of liquid-gas phase transition for saturated interactions using an adaptation of Pirogov-Sinaï-Zahradník theory in the continuous setting. "

PETER RUDZIS

TITLE : FLUCTUATIONS OF THE INHOMOGENEOUS ATLAS MODEL, WITH RELATED RESULTS ON SYSTEMS OF COMPETING BROWNIAN PARTICLES

Abstract: The Atlas model is a prototypical example of a rank-based diffusion, a system of Brownian particles whose interaction potential is a function of the order of the particles on the real line. In this model, the left-most particle is given a constant positive drift, while all other particles receive a drift of zero. We consider the Atlas model started from a stationary profile belonging to a 1-parameter family of Poisson point processes with exponentially growing intensity. Our results show that the appropriately centered and scaled occupation measure of the particle positions converge to a limit given as a solution of a certain stochastic partial differential equation (SPDE). The SPDE is started from a Brownian motion initial condition and is driven by an additive noise which is white in space and colored in time. The linear operator which determines its evolution is the infinitesimal generator of geometric Brownian motion. For a fixed space parameter, the field evolves in time locally like fractional Brownian motion with Hölder parameter 1/4. If time allows, we will also discuss recent results of ours on more general infinite-dimensional rank-based diffusions, exploring techniques for establishing existence and uniqueness of solutions and classifications of stationary distributions.

This work is joint with Sayan Banerjee and Amarjit Budhiraja (University of North Carolina - Chapel Hill).

Arxiv link: hZps://arxiv.org/abs/2310.04545

WILLIAM SALKELD

TITLE: CONDITIONAL MCKEAN-VLASOV EQUATION FOR LOCALLY INTERACTING EQUATIONS

Abstract: In this talk, I will discuss the dynamics of a collection of Gaussian Stochastic Differential Equations indexed by a random locally finite graph. The drift of each individual equation is dependent only on the dynamics of the individual and their neighbours so that each SDE exhibits strong correlation with a small number of other SDEs via these local interactions. Such local interactions arise in statistical physics, engineering and simulation of SPDEs, and are suitable for applications when long range interactions between distant individuals are described via a sequence of local interactions between neighbours. The price we pay for considering local interactions instead of macroscopic 'mean-field' interactions is that the when the number of equations is large we do not expect the statistical decoupling of any pair of equations. Instead, the dynamics exhibit a 'Markov Random Field' property where equations are conditionally independent of one another conditioning on an appropriate separating subset. Further, unimodularity of the underlying random graph ensures the marginal dynamics satisfy certain symmetry relationships. These fundamental properties of the entire system of equations is key to understanding the microscopic dynamics of each individual equation, and deriving a conditional McKean-Vlasov equation that describes the marginal distribution of a local neighbourhood of the graph.

This is based on joint work with Kavita Ramanan and Kevin Hu.

ArXiv: 2405.08803 and 2405.08795

YANNIC STEENBECK

TITLE: GIBBS VARIATIONAL PRINCIPLE FOR A MARKED GIBBS POINT PROCESS WITH UNBOUNDED MULTIBODY INTERACTIONS

Abstract. We consider a model which describes the effective interaction between colloids in a polymer bath; which is known as depletion interaction in the Asakura–Oosawa model, see e.g. [1, 2]. Formally, we study a class of marked point processes consisting of random points in Rd with random radii attached to them. The governing interaction in the corresponding Gibbs point processes is composed of a hardcore interaction of the corresponding spheres together with an area interaction of the spheres enlarged by the spherical ”depletion shell”.

This toy model can be interesting even without being intrigued by the underlying physics (or frying donuts in oil) because it has several characteristics which together differentiate the model from other better studied examples of Gibbs point processes. The interactions are of multibody nature, stem from marks, involve a hardcore condition, and are very much not of finite range. We prove a Gibbs variational principle for this interaction, i.e. we identify the (non-empty) sets of minimisers of the free energy density with the set of infinitevolume Gibbs measures, under a integrability assumption on the mark distribution. The proof follows a known general scheme to Gibbs variational principles, developed for example in [3] for superstable pair interactions, but has to take care of the peculiar difficulties of the considered model.

References

[1] Sho Asakura and Fumio Oosawa. On interaction between two bodies immersed in a solution of macromolecules. J. Chem. Phys., 22(7):1255–1256, 1954.

[2] Myriam Fradon, Julian Kern, Sylvie Roelly, and Alexander Zass. Diffusion dynamics for an infinite system of two-type spheres and the associated depletion effect, 2023.

[3] Hans-Otto Georgii. The equivalence of ensembles for classical systems of particles. Journal of Statistical Physics, 80(5):1341–1378, September 1995.

ANJA STURM

TITLE: ON THE CONTACT PROCESS ON DYNAMICAL RANDOM GRAPHS WITH DEGREE DEPENDENT DYNAMICS

Abstract: Recently, there has been increasing interest in interacting particle systems on evolving random graphs, respectively in time evolving random environments. In this talk we present results on the contact process in an evolving edge random environment on infinite (random) graphs. The classical contact process models the spread of an infection in a structured population. The structure is given by a graph and the infection is passed on along the edges with a constant rate while recovery from the infection happens spontaneously with rate 1. In an edge random environment the edges of the underlying (random) graph may be be dynamically opened and closed to infection.

We first give an overview over recent results. Then, we in particular consider (infinite) Bienaymé-Galton-Watson (BGW) trees as the underlying random graph. Here, we focus on an edge random environment that is given by a dynamical percolation whose opening and closing rates and probabilities are degree dependent. This means that any edges between two vertices are independently updated with rate v and subsequently again declared open (or otherwise closed) with probability p. Here, both v and p depend on the degrees of the adjoining vertices. Our results concern the impact of v and p on the critical infection rate for weak (global) and strong (local) survival of the infection. Specifically, we establish conditions under which the contact process undergoes a phase transition.

For a general connected locally finite graph we provide sufficient conditions for the critical infection rate to be strictly positive. Furthermore, in the setting of BGW trees, we provided conditions on the offspring distribution as well as on v and p so that the process survives strongly with positive probability for all positive values of the infection rate. In particular, if the offspring distribution follows a power law (or has a stretched exponential tail) and the connection probability is given by a product kernel (or a maximum kernel) and the update speed exhibits polynomial behaviour, we provide a quite complete characterisation of the phase transition.

This is based on joint work with Natalia Cardona-Tobon, Marcel Ortgiese and Marco Seiler.

FLORIAN THEIL

TITLE: FINITE SIZE CORRECTIONS OF KINETIC EQUATIONS

Abstract: We consider the asymptotic behaviour of solutions of particle systems in the limit where the number of particles tends to infinity. In the case of short-range

interactions and small densities it is expected that the solutions approximate solutions of the Boltzmann equation, a recent preprint by Deng, Hani and Ma confirms this. We consider regularisations of the particle evolution where the expected number of collisions per particle is bounded. Here we can establish convergence for large times and study finite-size corrections.

ANNA PAOLA TODINO

TITLE: ON THE CORRELATION BETWEEN CRITICAL POINTS AND THE CRITICAL VALUES FOR RANDOM SPHERICAL HARMONICS

Abstract: We study the correlation between the total number of critical points of random spherical harmonics and the number of critical points with value in any interval $I \subset \mathbb{R}$. We show that the correlation is asymptotically zero, while the partial correlation, after controlling the random L^2-norm on the sphere of the eigenfunctions, is asymptotically one. Our findings complement the results obtained by Marinucci and Rossi (2021) on the correlation between nodal and boundary length of random spherical harmonics.

Joint work with Valentina Cammarota.

RIK VERSENDAAL

TITLE: CLASSICAL LARGE DEVIATIONS ON RIEMANNIAN MANIFOLDS

Large deviations are concerned with the asymptotic behaviour on an exponential scale of a sequence of random variables. These typically describe deviations on the scale of the law of large numbers. Some classical results in this field are Cramѐr’s theorem (for empirical averages or scaled random walks) and Schilder’s theorem (for scaled Brownian motion). In this talk, we extend these classical results to a Riemannian context. If time permits, we will also discuss the case of evolving Riemannian manifolds. To study the Riemannian analogue of Cramѐr’s theorem, we first have to introduce geodesic random walks. Since Riemannian manifolds typically do not have a vector space structure, such random walks need to be defined recursively by following pieces of geodesics. The rate function for the large deviation principle in this geometric setting has a nice form, highlighting the different roles of various variables which are not seen in the Euclidean setting. For the Riemannian analogue of Schilder’s theorem, we will shortly discuss how to define and construct Brownian motion on a (time-evolving) Riemannian manifold. While this affects the rate function in an expected way (it is still the action of a trajectory), especially in the time-evolving setting one has to carefully think about the scaling, having to also incorporate a time-scaling of the evolution of the manifold.

Based on joint work with Frank Redig and Richard Kraaij.

ALEXANDER ZASS

TITLE: DISCRETE AND CONTINUOUS WIDOW-ROWLINSON MODELS IN RANDOM ENVIRONMENT

Abstract: In the Widom--Rowlinson model, introduced in 1969 to study the liquid-gas phase transition, disks of two possible colours are subject to a hard-core repulsion between particles of different colours. In this talk, we consider such a model in (three types of) quenched random environments. After introducing the joint process of environment and infinite-volume Widom--Rowlinson measure, we will show a new interesting feature of this model; namely, that even when the environment does not percolate, a certain non-local behaviour emerges. We show this by explicitly constructing a discontinuity of the Papangelou intensities that comes from the environment. This phenomenon can be understood as a continuous-space echo of a simpler non-locality phenomenon known to appear for the diluted Ising model (Griffiths singularity random field) on the lattice.

This is joint work with B. Jahnel and C. Külske.