Mikhail	**Alfimov**	National Research University Higher School of Economics	**On the applications of the AdS/CFT Quantum Spectral Curve to the spectral problem of N=4 SYM**	We developed the general framework for the BFKL spectrum of planar N=4 SYM. It allows to study the spectrum in the whole generality based on the Quantum Spectral Curve (QSC). We show how to apply our approach to reproduced the all known perturbative results for the BFKL pomeron dimension. We also get new all-loop analytic results for the Pomeron dimension in the vicinity of |n|=1, Delta=0 point and we obtained an explicit formula for the BFKL intercept function for arbitrary conformal spin up to NNLO order in the small coupling expansion and partial result at NNNLO order. From the numerical result were managed to deduce an analytical formula for the strong coupling expansion of the intercept function for arbitrary conformal spin.
Jan Peter	**Carstensen**	DESY, Hamburg	**Integrability in N=1 Superconformal Gauge Theories**	The SU(2,1|1) subsector of N=1 superconformal gauge theories consists of local operators made only out of fields from the vector multiplet. By combining superspace techniques with the background field formalism in a perturbative setting we find that, up to a redefinition of the coupling constant, the Hamiltonian acting on spin chains for this subsector can be identified with the one of N=4 SYM. This establishes the integrability of this subsector up to three loops. We also give first hints at an all loop argument, which is still work in progress. This generalizes a similar argument by Elli Pomoni for the SU(2,1|2) subsector of N=2 superconformal gauge theories.
Riccardo	**Conti**	Universita` degli Studi di Torino	**Exploring the spectrum of AdS_4 /CFT_3 at finite coupling**	Starting from the Quantum Spectral Curve (QSC) of AdS_4/CFT_3, we developed a numerical algorithm for the computation of the spectrum at finite coupling. Operators belonging to different sectors (both symmetric and non-symmetric) are examined. The results obtained match the analytical predictions – in the cases where they exist - of the strong coupling expansion of the conformal dimension and allow us to make predictions in the other cases. For some operators we also performed analytical continuation in the complex plane of the coupling in order to study the analytical structure of the conformal dimension around branch point singularities. Finally the same algorithm was used to compute other interesting quantities.
Sibylle	**Driezen**	VUB	**Classical and quantum aspects of Yang-Baxter Wess-Zumino Models**	Here I will present some aspects of the integrable Yang-Baxter deformation of the 2d Principal Chiral Model with a Wess-Zumino term. For arbitrary groups, the one-loop β-functions display a surprising connection between classical and quantum physics: the classical integrability condition is necessary to prevent new couplings being generated by renormalisation. Moreover, these models admit a simple realisation of Poisson-Lie duality where the WZW IR fixed point is the self dual PL point. Secondly, I will discuss an unanticipated feature of this class of models: when restricting to simply laced groups but staying outside of the integrable locus, a second fixed point emerges which is UV with respect to the IR WZW model.
Veronica	**Errasti Diez**	McGill University	**M-theory and knots**	Knots and their invariants have been a subject of great mathematical interest over many decades. More recently, there are ongoing efforts to develop a physical understanding of the subject in the context of string theory. In this poster, I present the construction of two M-theory models where knots can sensibly be embedded. I also discuss the relation between these two models, which unifies and links the previous proposals by Ooguri-Vafa and Witten. The poster further contains the details about the knot embedding process and explains how to obtain and physically interpret the simplest of knot invariants: the so-called linking number. This is work in progress, so there will be plenty of outlook comments too, hopefully leading to an interactive and exciting presentation.
Alessandro	**Georgoudis**	Uppsala University	**Bootstrap of five loop master integrals**	In this work we develop a general method of obtaining the expansions of massless two-point integrals. We exploit the symmetries of conformal four-point integrals and together with the method of asymptotic expansions we are able to fix all but one of the planar five-loop masters up to transcendental weight 9, while the remaining integral is obtained with {\HyperInt}.
Allan	**Gerrard**	University of York	**Nested Bethe ansatz for the twisted Yangian spin chain**	I will present the nested algebraic Bethe ansatz for a one dimensional open spin chain with `soliton non-preserving' boundary conditions. The underlying symmetry of the spin chain is Olshanskii's twisted Yangian $Y^\pm(\mathfrak{gl}_{2n})$, which corresponds to $\mathfrak{gl}_{2n}$ bulk symmetry that is broken by the boundary to either $\mathfrak{so}_{2n}$ or $\mathfrak{sp}_{2n}$. I will include an algebraic description of this system, as well as some interesting properties of its nested Bethe ansatz. Based on arXiv:1710.08409 with Niall MacKay and Vidas Regelskis.
Yvonne	**Geyer**	Institute for Advanced Study (IAS)	**Loops from Nodes: Two-loop gravity amplitudes from Ambitwistor Strings**	The last years have seen remarkable progress in understanding the scattering amplitudes of massless particles in arbitrary dimensions. Underlying the simple formulae are chiral worldsheet models, known as Ambitwistor Strings. While correlators admit a conventional genus expansion of the worldsheet, the amplitudes actually localize on the maximal non-separating degeneration. We explore this simplification at two loops for type II supergravity, concluding in several observations at higher loop order.

Tamás	**Gombor**	MTA Wigner RCP	**New boundary transfer matrices for classical sigma models**	The 2d principal models without boundaries have G×G symmetry group. The possible symmetries of classical theories with integrable boundary are H×H or G_D for boundary conditions found so far, where H is a subgroup of G for which G/H is symmetric space and G_D is the diagonal subgroup of G×G. A common property of these known boundary conditions is that they do not contain any free parameters. We have found new integrable boundary conditions for which the remaining symmetry groups are G×H or H×G and they contain one free parameter. The related boundary transfer matrices are also described.
David	**Grabner**	King's College London	**Strongly $\gamma-$deformed $\mathcal{N}=4$ SYM as an integrable CFT and its QSC$_\gamma$ description**	We present our recent findings that γ-deformed planar $\mathcal{N}=4$ SYM, supplemented by a set of double-trace counter-terms, has two non-trivial fixed points in the recently proposed double scaling limit. We provide evidence that, at the fixed points, the theory is described by an integrable, non-unitary, four-dimensional CFT. By considering a suitable four-point function, we derive the scaling dimension of twist-two operators with arbitrary Lorentz spin. Furthermore, we provide evidence that a suitable integrability description of this theory is given by the γ-deformed Quantum Spectral Curve QSC$_\gamma$, by deriving the same result for the scaling dimension.
Azeem	**Hasan**	City University of New York	**3d Printing of Quiver Gauge Theories**	3d Printing is an algorithm for constructing a large class (0,2) 2d toric theories starting from N=1 4d toric theories. Newton polytopes of these theories have the newton polygon of the 4d theory in the central plane with some of the points in this polytope lifted to a given height above and/or below this central plane. We show that the theories constructed by this process are always free of non-abelian guage anomalies and have (0,2) supersymmetry but they are not always reduced. Trying to reduce these theories leads us to a generalization of bubble reduction in 4d theories but we also learn that reducibility of these theories is not limited to it.
Lorenz	**Hilfiker**	Hamburg University	**Existence and uniqueness of solutions to Y-systems and TBA equations**	We consider Y-system functional equations of the form Y_n(x+i)Y_n(x−i)=\Prod_m^N (1+Ym(x))^{G_{nm}} and the corresponding nonlinear integral equations of the Thermodynamic Bethe Ansatz. We prove an existence and uniqueness result for solutions of these equations, subject to appropriate conditions on the analytical properties of the Y_n, in particular the absence of zeros in a strip around the real axis. The matrix G_{nm} must have non-negative real entries, and be irreducible and diagonalisable over R with spectral radius less than 2. This includes the adjacency matrices of finite Dynkin diagrams, but covers much more as we do not require G_{nm} to be integers. Our results specialise to the constant Y-system, proving existence and uniqueness of a strictly positive solution in that case.
Gleb	**Kotoousov**	Rutgers University	**Towards the first principles quantization of the $O(3)$ non linear sigma model.**	Integrable non linear sigma models have interesting applications to quantum field theory and condensed matter physics. However, standard methods of integrability, like the quantum inverse scattering, fail when applied even to the simplest cases, such as the $O(N)$ sigma models. In this work we revisit the problem of the quantization of the two-dimensional $O(3)$ non linear sigma model and its one-parameter integrable deformation - the sausage model. Our consideration is based on a new method, the so-called ODE/IQFT correspondence. The approach allowed us to explore the integrable structures underlying the quantum $O(3)$/sausage model. Among the obtained results is a system of non-linear integral equations for the computation of the vacuum eigenvalues of the quantum transfer-matrices.
Márton	**Lájer**	Eötvös Loránd University, Budapest	**Lüscher corrections for non-diagonal form factors in integrable QFTs**	I will outline a framework that provides dierct access both to the excited states' finite volume energy levels and non-diagonal form factors in integrable QFTs. The idea is to expand and analytically continue the Euclidean torus two-point function in the limit when the major radius is sent to infinity. We obtained the first Lüscher correction for a one-particle form factor of local operators in any integrable theory involving only a single massive excitation. We then applied the result to the Sinh-Gordon model and the form factor of the field operator, and expanded the same quantity in the coupling constant using Hamiltonian perturbation theory. Comparing the results in the regime where the two expansions overlap, we found complete agreement.
Jules	**Lamers**	Chalmers	**The partially isotropic Haldane-Shastry spin chain**	Over two decades ago a preprint appeared in which D. Uglov obtained the partially isotropic (XXZ-like) version of the celebrated Haldane-Shastry model and found its exact spectrum. The work was never published, however, and seems to have gone largely unnoticed and been forgotten since. We wish to revive and continue Uglov's work. We present a new and simpler expression for Uglov's Hamiltonian. While resembling the pairwise long-range form of the Haldane-Shastry spin chain our formula accounts for the multi-spin interactions found by Uglov. Our expression is physically meaningful, makes hermiticity manifest, and is computationally more efficient. We discuss the model's properties, including its limits and (ordinary and quantum-affine) symmetries, and review the exact spectrum for finite spin-chain length.

Enrico	**Olivucci**	Universitat Hamburg	**Integrable Fishnet CFT in any D**	We propose a D-dimensional generalization of 4D bi-scalar conformal quantum eld theory recently proposed by Gurdogan and Vladimir Kazakov. The dynamics of these graphs is described by the integrable conformal SO(D + 1; 1) spin chain. In 2D it is the analogue of L. Lipatov's SL(2;C) spin chain for the Regge limit of QCD, but with the spins s = 1=4 instead of s = 0.
Raul	**Pereira**	Trinity College Dublin	**Konishi OPE coefficient at five loops**	We use the method of asymptotic expansions to study the OPE limit of a four-point function of protected operators in N=4 SYM. Using the recently obtained expansions of five-loop p-integrals we are able to extract the OPE coefficient with Konishi at the five loop order.
Michaella	**Pettit**	King's College London	**An E11 invariant gauge fixing**	We consider the non-linear realisation of the semi-direct product of E11 and its vector representation which leads to a spacetime with tangent group that is the Cartan involution invariant subalgera of E11. We give an alternative derivation of the invariant tangent space metric that this space-time possesses and compute this metric at low levels in eleven, five and four dimensions. We show that one can gauge fix the non-linear realisation in an E11 invariant manner.
Randle	**Rabe**	University of Pretoria	**Determining the Spectrum of Primary Operators in Free CFT4 and Efficient Methods of Constructing Primary Operators**	General counting formulae for the spectrum of primary operators was derived for free CFT4 vector models. This was achieved by using group theoretic techniques to obtain character formulae for finite products of fields as representations of SO(4,2) (labelled by its Cartan subgroup). The approach was improved upon by deriving generating functions which are more efficient. Methods for constructing some of the primaries were developed, starting with an ansatz approach to construct symmetric primaries. A more efficient method was then used through Gegenbauer polynomials, which are related to primaries under a polynomial-tensor duality. Finally, the polynomial algorithm was generalized by mapping the problem of constructing primaries into a problem of solving a many-body quantum mechanics problem subject to certain linear constraints.
Ana	**Retore**	University of Miami	**Integrable quantum group invariant open spin chains**	The simplest anisotropic spin chains are arguably those that are integrable and have quantum group symmetry. Indeed, integrability allows access to the spectrum, and quantum group symmetry can account for the degeneracies and multiplicities. The prototypical example is the $ U_q(A_1)- $invariant open spin-1/2 chain of Pasquier and Saleur. We briefly review this example, and then show how it can be generalized in a systematic way using the Quantum Inverse Scattering Method.
Sergei	**Savin**	Universität Hamburg	**3456-supergravity induced 4-point correlator**	We present the result of the supergravity induced 4-point correlation function of 1/2-BPS operators of weights {3,4,5,6}.
Fiona	**Seibold**	ETH Zürich	**Poisson-Lie duals of deformed symmetric space sigma models.**	Two of the most well-studied integrable deformations of the superstring action in AdS5xS5 are the eta and lambda models. It has been argued that the eta model is related by Poisson-Lie duality to an analytic continuation of the lambda model. The poster presents the results obtained in [arXiv :1709.01448] . This paper focused on bosonic symmetric space sigma models and explored the different dualities that survive the eta deformation.
Maxime	**Trepanier**	King's College London	**Compact instantons**	While the thin-wall approximation has been used extensively to study the decay of metastable vacua through tunneling, a recent investigation has shown that this method is in remarkable agreement with numerical data even well outside its naively expected domain of validity. Here we study compact instantons by extending the analysis of Coleman and De Luccia to the so-called thermal regime. We recover both the Coleman-De Luccia and Hawking-Moss instantons as two limits of this class of solutions. This also suggest a revised criterion for the thin-wall approximation which is consistent with numerical results. Finally, we relate the phase transition identified in our previous paper to the positive energy theorem.
Edoardo	**Vescovi**	U. Sao Paulo	**Two non-BPS Wilson loops: quark-antiquark potential in defect CFT and circular loop beyond the wavy approximation**	I determine the potential energy of a quark-antiquark pair in a Higgsed variant of N=4 SYM with a codimension-1 defect at weak/strong coupling [1708.04884]. In the latter regime, the relevant string free energy displays Gross-Ooguri transitions between a connected string surface and a phase where the string breaks into two disconnected surfaces. I also consider small deformations of the circular Wilson loop in N=4 SYM. Kruczenski showed that the Wilson loop vev at strong coupling is invariant under certain spectral-parameter deformations. This symmetry was later found by Dekel to break down at weak coupling only at an unexpected high order in the deformation parameter. I report ongoing progress to understand such approximate symmetry in gauge theory.
Deliang	**ZHONG**	LPTENS	**Yangian Symmetry for Fishnet Feynman Graphs**	We will discuss the Yangian symmetry of scalar graphs in three, four and six spacetime dimensions as well as the inclusion of fermions in four dimensions. The Yangian symmetry results in novel differential equations for these families of largely unsolved Feynman integrals. Consequently, the study of fishnet graphs allows us to get deep insights into the integrability of the planar AdS/CFT correspondence.