Why we are here.

Topical keywords: As experts in nuclear, hadronic, particle, AMO, and chemical physics, we gather to explore emergent phenomena at and near universality. Here, we will report on progress in efforts to bridge gaps between these lines of research which developed largely independent of one another.

We will foster communication and establish a common language to enhance the parallelism of effects that arise in different domains. The excitement and growth of this effort to identify common underlying structures in different fields can be quantified by the increasing numbers of meetings related to the manifestations of universality in few- and many-body systems, and we will orient our discussions on those earlier meetings and learn from those. Recent examples include: 'Living Near Unitarity' (KITP, 2022), 'Critical Stability of Few-Body Quantum Systems' (ECT*, 2023), 'Quantum Few- and Many-Body Systems in Universal Regimes' (INT, 2023), and 'Quantum Few- and Many-Body Systems in Universal Regimes' (INT, 2024).

We will focus primarily on recent findings and on outstanding questions that will continue to drive the field forward. We are lucky to integrate the particle-physics community along with its lattice techniques because of the seeming rift in how quarks and gluons are described compared with the semi-classical treatment of molecules where we seek most advancement. It is here where we expect the most gain: where universality is least expected and surprising with separation of scales and a high dimensional dynamics as the only unifying aspects.

Nudges for the . . .

presenter

- Although the organizers appear not to have given a lot of thought to scheduling my talk in an appropriate slot, how could I relate it to the nearest-neighbor presentations?
- Did I forget to mention both the issue of biggest fascination and frustration of my research?
- Did I forget to raise a question I deem non-trivial, and, which I always kept in my drawer in case a beyond-AI entity grants me ≥ 1 wish?

moderator

- Have I asked all questions everyone else was thinking about but has been too pround to spell out?
- Have I activated people in the audience whose expertise I–maybe naively–deem pertinent to a presented issue?
- Have I been sharp enough to spot interdisciplinary connections, misunderstandings, and peculiarities?

Monday, 9 June

Universality in (quantum) field, statistical (non)relativistic theory

8:30–9:00	**Welcome and opening remarks (ECT* director)**			
9:00–9:30	**Scientific overview (organizers)**			
9:30–10:30	garret	**Stanislaw Glazek**	On the natural occurance of limit cycles in the course of renormalization of quantum Hamiltonians	(H.W. Grießhammer)
10:30–10:45	**coffee, tea, water, &c.**			
10:45–11:45	garret	**Ubirajara van Kolck**	Effective Field Theory	(E. Hiyama) practical hurdles for EFT predictions for few-body systems
11:45–12:45	garret	**Toshali Mitra**	Hydrodynamic attractors-fluid dynamics far from equilibrium	(M. Birse)
12:45–15:00	**lunch + break-out**			
15:00–16:00	garret	**Qingze Guan**	Modeling the laser-pulse-induced helium dimer and trimer dynamics	(L. Madeira)
17:00–19:30	**Walk to...**			

Tuesday, 10 June

When 3 do not care about 2 and how 4 and more try to disentangle.

9:00–9:30	**Good morning discussion**			
9:30–10:30	garret	**Pascal Naidon**	Stabilization of three-body resonances to bound states in a continuum	(A. Deltuva)
10:30–10:45	**coffee, tea, water, &c.**			
10:45–11:45	garretgarret	**Sebastian Dawid**	Analyticity of three-body amplitudes and Efimov states	(P. Naidon)
11:45–12:45	garret	**Arnoldas Deltuva**	Scattering and reactions in few-body systems	(S. Dawid)
12:45–15:00	**lunch + break-out**			
15:00–16:00	garret	**Amy Nicholson**	Universal noise and Efimov physics **or** The Stochastic Feynman-Hellmann Method (and its relevance for perturbative -higher-order EFT calculations)	(John Doe)
16:00–17:00	garret	**Alejandro Kievsky**	the three-nucleon parameter	(U.v. Kolck)
17:00–19:30	**Walk to...**			

Wednesday, 11 June

Transition to composite, cluster degrees of freedom and external probes.

9:00–9:30	**Morning palaver**			
9:30–10:30	garret	**Francesco Pederiva**	Hypernuclear systems with Neural Network Quantum States	(Q. Guan)
10:30–10:45	**coffee, tea, water, &c.**			
10:45–11:45	garret	**Lucas Madeira**	Effective field theory for atomic 4He clusters	(F. Wu)
11:45–12:45	garret	**Ylenia Capitani**	Cluster EFT calculation of electromagnetic breakup reactions with the LIT method	(D. Gazit)
12:45–15:00	**lunch + break-out**			
15:00–16:00	garretgarret	**Feng Wu**	Bosonic few-body systems expanded around the unitarity limit	(Y. Capitani)
16:00–17:00	garret	**Emiko Hiyama**	4He bosonic system and universality	(F. Pederiva)
17:00–xx:00	**Walk to the conference dinner**			

Thursday, 12 June

Beyond $v \ll c$

9:00–9:30		**Wake-up semi-hour**		
9:30–10:30	garret	**Zohreh Davoudi**	Universal thermalization dynamics in and/or quantum thermodynamics for gauge theories	(T. Mitra)
10:30–10:45		**coffee, tea, water, &c.**		
10:45–11:45	garret	**Harald Grießhammer**	Towards the Unitarity Limit in EFTs with Pions	(M. Mai)
11:45–12:45	garret	**Maxim Mai**	UU - Universal implications of S-matrix Unitarity	(S. Glazek)
12:45–15:00		**lunch + break-out**		
15:00–16:00	garret	**Andrew Jackura**	Three-Body Dynamics in QCD	(A. Kievsky)
16:00–17:00	garret	**Matthias Schindler**	The large-Nc and unitary limits in nucleon-nucleon scattering	(A. Nicholson)
17:00–19:30		**Walk to...**		

Friday, 13 June

The frontier

9:00–9:30	**Warum-up words**			
9:30–10:30	garret	**Alejandro Saenz**	(Harmonic) traps, OPE, and what they teach us for non-atomic systems	(A. Jackura)
10:30–12:00	**coffee, tea, water, &c.**			
10:45–xx:00	garret	**Doerte, Raúl, Johannes**	Our universal list of the hardest, the most intriguing, and the funniest problems for all students of science	(∀)
12:00–xx:00	**lunch + break-out**			