

New Ideas in Constraining Nuclear Forces

Monday, 4 June, 2018 - 08:30 to Friday, 8 June, 2018 - 14:00

– Program –

Talks will be 25 + 15 min. Please prepare a few questions for discussions.

Monday, June 4: Constraining nuclear forces with few- and many-body observables	
9:10	Welcome
9:20	Welcome address of the ECT* Director
9:40	D. Lee: Nuclear forces and structure in nuclear lattice simulations
10:20	Coffee break
10:50	J. Ruiz de Elvira: Determination of the pion-nucleon low-energy constants
11:30	C. Drischler: An efficient Monte Carlo framework for nuclear-matter calculations
12:10	Lunch
14:10	J. W. Holt: Constraints on the nuclear equation of state from neutron star observations
14:50	Discussion: Novel constraints in nuclear physics including many-body observables and saturation properties of nuclear matter
15:30	Coffee break
16:00	Further Discussion: Novel constraints in nuclear physics including many-body observables and saturation properties of nuclear matter
17:00	End of day 1

Tuesday, June 5: Current limitations of nuclear Hamiltonians	
9:00	A. Schwenk: Status and challenges of chiral effective field theory calculations of nuclei and dense matter
9:40	S.R. Stroberg: Observables in medium-mass nuclei
10:20	Coffee break
10:50	C. Wellenhofer: Uncertainty quantification for nuclear many-body calculations

11:30	A. Ekström: How do we handle computationally expensive observables when fitting an interaction?
12:10	Lunch
14:10	A. Gezerlis: From microscopic to effective interactions via Quantum Monte Carlo
14:50	S. Gandolfi: Quantum Monte Carlo calculations of properties of nuclei with chiral interactions
15:30	Coffee break
16:00	Discussion: Status and shortcomings of current state-of-the-art nuclear Hamiltonians
17:00	End of day 2

Wednesday, June 6: Improving two- and many-body nuclear forces with novel fitting strategies and higher orders in chiral EFT	
9:00	M. Piarulli: From light nuclei to neutron stars with chiral dynamics
9:40	E. Epelbaum: Chiral nuclear forces at the precision frontier
10:20	Coffee break
10:50	H. Krebs: Symmetry preserving regularization of nuclear forces and currents
11:30	K. Hebeler: Implementation and applications of three-nucleon interactions and nuclear currents
12:10	Lunch
14:10	C. Forssén: Different strategies for EFT parameter estimation in the few-nucleon sector
14:50	S. Wesolowski: Bayesian parameter estimation for chiral interactions: NN sector
15:30	Coffee break
16:00	Discussion: Higher orders, delta degrees of freedom, and new strategies in fitting nuclear interactions
17:00	End of day 3

Thursday, June 7: Power counting: Beyond Weinberg (?)	
9:00	H. W. Griesshammer: What's the issue, and why do we care?
9:40	U. van Kolck: Counting powers of what? Where?
10:20	Coffee break
10:50	B. Long: Perturbative NN scattering
11:30	S. König: Nuclear physics around the unitarity limit
12:10	Lunch
14:10	C.-J. Yang: Examining chiral EFT potentials with Lepage plots
14:50	M. P. Valderrama: Perturbative vs non-perturbative nuclear EFT: A potential compromise?
15:30	Coffee break
16:00	Discussion: Power counting, regularization, renormalization, and related topics
17:00	End of day 4

Friday, June 8: Constraining nuclear forces from lattice QCD calculations	
9:00	Z. Davoudi: Nuclear and hypernuclear forces from lattice QCD
9:40	K. Sasaki: Baryon interactions from lattice QCD
10:20	Coffee break
10:50	A. Roggero: Pionless EFT for medium-mass nuclei
11:30	C. Barbieri: SCGF studies on nuclei based on novel chiral and lattice QCD nuclear forces
12:10	Lunch
14:00	End of the workshop