CAPS & CQA Winter School on Ultracold Quantum Many-body Systems

Schedule

	Monday 17	Tuesday 18	Wednesday 19	Thursday 20	Friday 21
8.55		briefing	briefing	briefing	briefing
9	Registration (9h) & welcome (9h45)	Will (1)	Morigi (2)	Will (3)	Browaeys (3)
10	Stringari (1)	Stringari (2)	Browaeys (2)	Morigi (3)	Ferrier-Barbut (3)
11	COFFEE BREAK				
11.30	Browaeys (1)	Gopalakrishnan (2)	Stringari (3)	Ferlaino (1)	Ferlaino (2)
12.30	Fallani (1)	LUNCH & SNOW BREAK (free time)	Ferrier-Barbut (2)	LUNCH & SNOW BREAK (free time)	Ferlaino (3)
13.30	LUNCH BREAK		LUNCH BREAK		LUNCH BREAK
15	Ferrier-Barbut (1)		Will (2)		Fallani (3)
16	Petrov (1)		Petrov (2)		Gopalakrishnan (3)
17	TEA BREAK		TEA BREAK		TEA BREAK
17.15	Gopalakrishnan (1)		Fallani (2)		Petrov (3)
18.15	Morigi (1)	Poster session 1 (A-L)	Poster session 2 (M-Z)	Discussion session + poster prizes	Conclusion
19.15	reception buffet (paella)				
20.15		dinner	dinner	dinner	dinner

Website: https://www.benasque.org/2025uqms/

Format of lectures: 3 lectures (of 1h each) per speaker

Lecturer	General title	Title of lecture 1	Title of lecture 2	Title of lecture 3
Antoine Browaeys	Exploring Many-body physics with arrays of Rydberg atoms	Many-Body physics; Arrays of atoms; Rydberg atoms; Interaction between atoms	Plumbing; Interaction between Rydberg atoms and spin models: natural and engineered	Quantum simulation of quantum magnets in and out of equilibrium
Leonardo Fallani	Analog quantum simulation	Ultracold toolbox for analog quantum simulators	Multicomponent mixtures of two-electron fermions	Synthetic dimensions and topological quantum matter
Francesca Ferlaino	Long-range dipolar physics with magnetic atoms	Multi-electron atomic spieces for quantum simulation	Dipolar many-body bulk phases	lattice-confined dipolar quantum gases
Igor Ferrier-Barbut	Collective light-matter interactions in atomic ensembles	Quantum optics: light scattering by single atoms	Collective light scattering in atomic ensembles, the classical case	Collective light scattering in the strongly excited case. "Many-body quantum optics"

Sarang Gopalakrishnan	Fluctuating hydrodynamics in cold gases	Measuring and thinking about transport	Hydrodynamics of charge fluctuations	Hydrodynamics of monitored quantum systems			
Giovanna Morigi	Engineering reservoir for photons and atoms	Open quantum systems	Quantum reservoir engineering and state steering	Noise-assisted shortcuts to adiabaticity			
Dmitry Petrov	Few-atom problem and quantum Townes solitons	Introduction to the few-atom problem	Non-Efimovian clusters and 2D quantum anomaly	Townes solitons beyond mean field			
Sandro Stringari	Propagation of sound and superfluidity	Superfluids at finite tempertaure: a tale of two sounds	Dynamical breaking of Galilean invariance and propagation of sound	Spontaneous breaking of translational invariance: another tale of two sounds			
Sebastian Will	Creating and exploring BECs of dipolar molecules	Assembling and controlling dipolar molecules	Creating BECs of dipolar molecules	Exploring BECs of dipolar molecules			
				Sebastian may need to leave on friday afternoon, so we should make sure that his lectures finish on thursday	Antoine/Igor cannot make it to Friday afternoon session		
				Francesca will most likely join on Thursday morning (after the coffee break)			
				Giovanna will not be there on Friday			
	Topic: Few-atom problem & quantum Tow	Introduction to the few-atom	Non-Efimovian clusters & 2D qu	Townes soliton beyond mean field			