

**Boulder 2004 summer school:**  
**Coherence and interactions in condensed matter physics**

**Schedule of lectures and events (lectures in Duane physics, G125)**

Week 1: July 5-9		
Monday, July 5		
<i>Time</i>	<i>Event</i>	<i>Presenter</i>
9:00 - 9:30	Welcoming remarks	Organizers
9:30 - 10:45	Introduction to BEC (I)	Cornell
10:45 - 11:00	Coffee break	
11:00 - 12:15	Introduction to BEC (I)	Cornell
3:15 - 4:30	Classical and quantum phase transitions	Sachdev
4:30 - 5:30	Discussion	
Tuesday, July 6		
9:00 - 10:15	Classical and quantum phase transitions	Sachdev
10:15 - 10:45	Coffee break	
10:45 - 12:00	Ultra cold atoms on optical lattices	Greiner
7:30 - 8:30	Discussion	
Wednesday, July 7		
9:00 - 10:15	Introduction to BEC (II)	Ketterle
10:15 - 10:45	Coffee break	
10:45 - 12:00	Classical and quantum phase transitions	Sachdev
7:00 - 9:00	Poster session (11th floor Gamow tower)	
Thursday, July 8		
9:00 - 10:15	Introduction to BEC (II)	Ketterle
10:15 - 10:45	Coffee break	
10:45 - 12:00	BEC on atom chips	Vuletic
3:15 - 4:30	Ultra cold atoms on optical lattices	Greiner
4:30 - 5:30	Discussion	
Friday, July 9		
9:00 - 10:15	Introduction to BEC (II)	Ketterle
10:15 - 10:45	Coffee break	
10:45 - 12:00	Introduction to quantum optics	Zoller
5:00 -	School BBQ at Kittredge Pond	

Week 2: July 12-16		
Monday, July 12		
<i>Time</i>	<i>Event</i>	<i>Presenter</i>
9:00 - 10:15	Introduction to cavity QED	Haroche
10:15 - 10:45	Coffee break	
10:45 - 12:00	Semiconductor quantum optics	Imamoglu
3:15 - 4:30	Introduction to quantum optics	Zoller
4:30 - 5:30	Discussion	
7:00 - 8:00	Quantum Money, Information and Computation (public lecture)	Girvin
Tuesday, July 13		
9:00 - 10:15	Introduction to cavity QED	Haroche
10:15 - 10:45	Coffee break	
10:45 - 12:00	Semiconductor quantum optics	Imamoglu
2:45 - 4:00	Introduction to quantum optics	Zoller
4:00 - 5:00	Discussion	
5:00 -	School cookout at Flagstaff Mountain (bus leaves from Kittredge)	
Wednesday, July 14		
9:00 - 10:15	Introduction to superconducting qubits	Girvin
10:15 - 10:45	Coffee break	
10:45 - 12:00	Coherent and collective phenomena in quantum optics	Yelin
3:15 - 4:30	Experiments with trapped ions	Wineland
7:00 - 9:00	Poster session (11th floor Gamow tower)	
Thursday, July 15		
9:00 - 10:15	Introduction to superconducting qubits	Girvin
10:15 - 10:45	Coffee break	
10:45 - 12:00	Experiments with trapped ions	Wineland
7:30 - 8:45	Coherent and collective phenomena in quantum optics	Yelin
Friday, July 16		
9:00 - 10:15	Trapped ion liquids and crystals	Bollinger
10:15 - 10:45	Coffee break	
10:45 - 12:00	Manipulating photons with atomic ensembles	Lukin
3:15 - 4:30	Discussion	
5:00 -	School BBQ at Kittredge Pond	

Week 3: July 19-23

Monday, July 19

<i>Time</i>	<i>Event</i>	<i>Presenter</i>
9:00 - 10:15	Cold fermions, Feshbach resonance and molecular condensates (I)	Hulet
10:15 - 10:45	Coffee break	
10:45 - 12:00	Quantum noise	Levitov
3:15 - 4:30	Exciton condensation	Butov
4:30 - 5:30	Discussion	
7:00 - 9:00	Student presentations	

Tuesday, July 20

9:00 - 10:15	Cold fermions, Feshbach resonance and molecular condensates (I)	Hulet
10:15 - 10:45	Coffee break	
10:45 - 12:00	Quantum noise	Levitov
7:30 - 8:45	Quantum optics experiments in semiconductors	Yamamoto

Wednesday, July 21

9:00 - 10:15	The Quantum Hall Effect with electrons and with ultra cold atoms	Read
10:15 - 10:45	Coffee break	
10:45 - 12:00	Quantum noise	Levitov
3:15 - 4:30	Topological order: ideas and applications	Nayak
4:30 - 5:30	Discussion	

Thursday, July 22

9:00 - 10:15	The Quantum Hall Effect with electrons and with ultra cold atoms	Read
10:15 - 10:45	Coffee break	
10:45 - 12:00	Topological order: ideas and applications	Nayak
3:15 - 4:30	Topological order: ideas and applications	Nayak
4:30 - 5:30	Discussion	
7:30 - 8:30	Stone Cold Science: Things Get Weird Around Absolute Zero (public lecture)	Cornell

Friday, July 23

9:00 - 10:15	The Quantum Hall Effect with electrons and with ultra cold atoms	Read
10:15 - 10:45	Coffee break	
10:45 - 12:00	Atom interactions in fermi gases near a Feshbach resonance	Shlyapnikov
3:00 - 5:00	Poster session (11th floor Gamow tower)	
5:00 -	School BBQ at Kittredge Pond	

Week 4: July 26-30

Monday, July 26

<i>Time</i>	<i>Event</i>	<i>Presenter</i>
9:00 - 10:15	Cold fermions, Feshbach resonance and molecular condensates (II)	Jin
10:15 - 10:45	Coffee break	
10:45 - 12:00	Effective Hamiltonians and quantum magnetism of ultra cold atoms	Altman
3:00 - 5:30	JILA Lab tour	

Tuesday, July 27

9:00 - 10:15	Cold fermions, Feshbach resonance and molecular condensates (II)	Jin
10:15 - 10:45	Coffee break	
10:45 - 12:00	Effective Hamiltonians and quantum magnetism of ultra cold atoms	Altman
7:00 - 9:00	Student presentations	

Wednesday, July 28

9:00 - 10:15	Recent advances in rapidly rotating condensates	Fetter
10:15 - 10:45	Coffee break	
10:45 - 12:00	Symmetries and geometric phases in condensed matter and atomic physics	Zhang
7:30 - 8:30	Discussion	

Thursday, July 29

9:00 - 10:15	Symmetries and geometric phases in condensed matter and atomic physics	Zhang
10:15 - 10:45	Coffee break	
10:45 - 12:00	Numerical methods for strongly correlated systems	Troyer
7:00 - 9:00	Poster session (11th floor Gamow tower)	

Friday, July 30

9:00 - 10:15	Numerical methods for strongly correlated systems	Troyer
10:15 - 10:45	Coffee break	
10:45 - 12:00	Ultracold atoms in optical lattices and magnetic microtraps	Demler
3:15 - 4:15	Discussion	
4:30 - 5:00	conclusion	organizers
5:00 -	School BBQ at Kittredge Pond	