



**6th International Summer School
of the SFB/TRR21
"Control of Quantum Correlations in Tailored Matter"
Heinrich-Fabri-Haus, Blaubeuren
July 29 - 31, 2013**

Chair: F. Jelezko, R. Kleiner, R.Löw, W. Schleich

Scientific Topic:

Atom Interferometry

Speakers:

Hartmut Abele, Atominstitut, TU Wien
Daniel Greenberger, CUNY, New York
Frank Narducci, Naval Air Systems Command, USA
Ernst Maria Rasel, Institut für Quantenoptik, Leibniz Universität, Hannover
Stig Stenholm, KTH, Royal Inst. of Technology, Stockholm

Topics:

Precision experiments with cold neutrons (H. Abele, Tutorial)
Test of Newton's gravity law with quantum interference (H. Abele, Talk)
Genesis and the significance of the GHZ theorem (D. Greenberger)
Interaction of a two-level atom with a single mode field (F. Narducci, Tutorial)
Frequency selectable atom interferometers for magnetometry (F. Narducci, Talk)
Publishing in APS Journals (F. Narducci, Evening Talk)
Matter wave interferometry (E. M. Rasel, Tutorial)
Testing fundamental physics with matter waves (E. M. Rasel, Talk)
How to live in quantum reality? (S. Stenholm, Tutorial)
The emergence of entropy (S. Stenholm, Talk)

Poster Session:

Presentations by the students of the SFB/TRR21

Co.Co.Mat Award:

Award by the SFB/TRR21 for last year's best PhD Thesis

Overview:

Mo 29.07.	Speaker	Tue, 30.07.	Speaker	Wed, 31.07.	Speaker
	<i>Arrival</i>	9:00-10:00	Hartmut Abele <i>Test of Newton's gravity law with quantum interference (Talk)</i>	9:00-10:30	Stig Stenholm <i>How to live in quantum reality? (Tutorial)</i>
			<i>Discussion</i>		
		10:00-10:30	<i>Coffee Break</i>	10:30-11:00	<i>Coffee Break</i>
		10:30-12:00	E. M. Rasel <i>Matter wave interferometry (Tutorial)</i>	11:00-12:00	E. M. Rasel <i>Testing fundamental physics with matter waves (Talk)</i>
			<i>Discussion</i>		<i>Discussion</i>
12:00-13:30	<i>Lunch</i>	12:00-13:30	<i>Lunch</i>	12:00-13:30	<i>Lunch</i>
13:30-15:00	Frank Narducci <i>Interaction of a two-level atom with a single mode field (Tutorial)</i>	13:30-17:30	<i>Excursion</i>	13:30-14:30	Stig Stenholm <i>The emergence of entropy (Talk)</i>
	<i>Discussion</i>				<i>Discussion</i>
15:00-15:30	<i>Coffee Break</i>			14:45-15:15	<i>Final discussion with SFB PhD's</i>
15:30-17:00	Hartmut Abele <i>Precision experiments with cold neutrons (Tutorial)</i>				<i>Departure</i>
17:00-17:30	<i>Coffee Break</i>	17:30-18:30	Daniel Greenberger <i>Genesis and the significance of the GHZ theorem</i>		
17:30-18:30	Frank Narducci <i>Frequency selectable atom interferometers for magnetometry (Talk)</i>				
18:30-19:00	Co.Co.Mat Award				
19:00-20:00	<i>Dinner</i>	19:00-20:00	<i>Dinner</i>		
20:00-open end	Start Poster session	20:00-21:00	Evening talk: Frank Narducci <i>Publishing in APS Journals</i>		

Poster Presentations (incomplete):

J. Rührig et al, (A2), *Novel paths to phase-space density increase in dipolar atomic gases*

D. Heim et al, (A5), *A tunable macroscopic quantum system based on two fractional vortices*

H. Sickinger et al, (A5), *Josephson vortices: fractional flux quantization*

D. Jaschke et al, (A7), *Finite temperature many-body quantum states with matrix product density operators*

A. Krupp et al, (B6), *Coupling a single electron to a Bose-Einstein condensate*

D. Peter et al, (B8), *Driving dipolar fermions into the quantum Hall regime*

M. Knufinke et al, (C2), *Millikelvin-system for the investigation of solid state/cold atom hybrid devices*

M. Rudolph et al, (C2), *Sensitive nanoSQUIDs for the investigation of small spin systems*

J. Grimm et al, (C2), *Line shifts of Rydberg atoms near surfaces due to adsorbate fields*

P. Weiss, et al, (C2), *Interfacing cold atoms and superconductors*

P. Federsel, et al, (C9), *Cold atom scanning probe microscopy*