

## ORGANIZATION

### Scientific Organizer

**Prof. Dr. Martin Weitz**

Universität Bonn

Institut für Angewandte Physik

Wegelerstrasse 8

53115 Bonn

GERMANY

✉ [martin.weitz@uni-bonn.de](mailto:martin.weitz@uni-bonn.de)

[http://www.iap.uni-bonn.de/ag\\_weitz/index.html](http://www.iap.uni-bonn.de/ag_weitz/index.html)

### Wilhelm und Else Heraeus-Stiftung

Heike Uebel

Postfach 1553

63405 Hanau

GERMANY

☎ +49 / (0)6181 / 92325 - 12

Fax: +49 / (0)6181 / 92325 - 15

✉ [uebel@we-heraeus-stiftung.de](mailto:uebel@we-heraeus-stiftung.de)

<http://www.we-heraeus-stiftung.de>

### Contact

Ilona Jaschke

Universität Bonn

Institut für Angewandte Physik

Wegelerstrasse 8

53115 Bonn

GERMANY

☎ +49 / (0)228-73-4836

Fax: +49 / (0)228-73-4835

✉ [jaschke@iap.uni-bonn.de](mailto:jaschke@iap.uni-bonn.de)

Registration Deadline: December 01, 2009

There is no conference fee. Accommodation and meals for all participants will be provided by WE- Heraeus Foundation.

### Website:

<http://www.iap.uni-bonn.de/weh450>

Please find the updated version of this flyer as .pdf-file and the registration form as .pdf- and .doc-files on this website.

450<sup>TH</sup>

## WE-HERAEUS-SEMINAR



## MIXED STATES OF LIGHT AND MATTER

FEBRUARY 07 - 10, 2010

<http://www.iap.uni-bonn.de/weh450>

Physikzentrum  
Bad Honnef, Germany  
<http://www.pbh.de>

## INTENTION OF THE WORKSHOP

Light and matter are mostly considered as separate phenomena. First works exploring mixed states of light and matter are due to Hopfield, who 50 years ago considered quantized Eigenstates of matter coupled to light, to explain optical properties of the solid state. In the medium the electromagnetic wave is accompanied by a polarization wave, and a polariton, a coupled state of matter and light, develops. The topic of these mixed states has gained considerable interest due to recent experimental developments. In atomic gases, aided by dark resonances, optical group velocities with magnitudes down to a few meters per second can be observed, eight orders of magnitude below the speed of light in vacuum. A central role here plays the concept of dark polaritons, i.e. long lived mixed states of matter and light. A further fascinating development in the area of mixed states of light and matter are exciton Bose-Einstein condensates. These constitute macroscopic quantum states of half matter and half light.

It is the aim of this seminar to highlight present frontier research of mixed states of light and matter in different areas of physics, ranging from atomic and molecular systems up to solid state physics ensembles.

A poster session will be held on February 09, 2010.

## INVITED SPEAKERS

- **Manfred Bayer**, Universität Dortmund
- **Rainer Blatt**, Universität Innsbruck
- **Immanuel Bloch**, MPQ Garching
- **Thomas Elsässer**, Max Born Institut Berlin
- **Michael Fleischhauer**, Universität Kaiserslautern
- **Elisabeth Giacobino**, Laboratoire Kastler Brossel Paris
- **Harald Gießen**, Universität Stuttgart
- **Ulrich Höfer**, Universität Marburg
- **Mackillo Kira**, Universität Marburg
- **Claus Klingshirn**, Universität Karlsruhe
- **Peter Littlewood**, Imperial College London
- **Mikhail Lukin**, Harvard University
- **Demetri Psaltis**, École Polytechnique Fédérale de Lausanne
- **Jean-Michel Raimond**, École Normale Supérieure Paris
- **Gerhard Rempe**, MPQ Garching
- **David Snoke**, University of Pittsburgh
- **Heinrich Stolz**, Universität Rostock
- **Martin Wolf**, Freie Universität Berlin
- **Artur Zrenner**, Universität Paderborn

## SCIENTIFIC PROGRAMME

Sunday, February 07, 2010	
	Arrival

Monday, February 08, 2010	
9 - 12:30	Lectures
14 - 18:30	Lectures

Tuesday, February 09, 2010	
9 - 12:30	Lectures
14 - 18:30	Lectures and Poster Session

Wednesday, February 10, 2010	
9 - 12:30	Lectures
14 - 15:30	Lectures
from 16:00	Departure