

Scope

The practical use of scattering methods has made a rapid progress since the basic experiments and research of Konrad Röntgen, Max von Laue and a large number of other great scientists. The better understanding of the structure of matter was strongly linked to the technical development of new scattering methods in the last century. The improvement of these techniques has led to new developments in all fields of science. The aim of the workshop is to give PhD students a state-of-the-art overview about theory and experiment in scattering. Starting with an elementary introduction, internal and external lecturers will highlight recent developments in this emerging field of science.

Invited Speakers

Simon L. Billinge, Columbia Univ. (New York, USA)
Heinz-Günter Brokmeier, TU Clausthal (Clausthal, D)
Jeremy K. Cockcroft, UCL (London, UK)
Robert Dinnebier, MPI-FKF (Stuttgart, D)
Christoph Genzel, HMI (Berlin, D)
Vladimir Hinkov, UBC (Vancouver, CA)
Maurits W. Haverkort, MPI-FKF (Stuttgart, D)
Holger Klein, CNRS (Grenoble, F)
Gernot Kostorz, ETH (Zürich, CH)
Andreas Leineweber, MPI-IS (Stuttgart, D)
Jost Lemmerich (Berlin, D)
Wolfgang Ludwig, ESRF (Grenoble, F)
Eric J. Mittemeijer, MPI-IS (Stuttgart, D)
Poul Norby, DTU (Roskilde, DK)
Oliver Oeckler, Univ. Leipzig (Leipzig, D)
Wolfgang Pantleon, DTU (Lyngby, DK)
Fritz Phillip, MPI-IS (Stuttgart, D)
Harald Reichert, ESRF (Grenoble, F)
Ian Robinson, UCL (London, UK)
George Sawatzky, UBC (Vancouver, CA)
Paolo Scardi, Univ. of Trento (Trento, I)
Andreas Stierle, DESY (Hamburg, D)
Simone Techert, MPI-PC (Göttingen, D)
Hartmut Zabel, RUB (Bochum, D)

Organizing Committee

B. Keimer, R. Dinnebier, E. J. Mittemeijer, A. Leineweber,
G. Sawatzky

Location

Werner-Köster-Hörsaal (2 R4)

Max Planck Institute for Intelligent Systems
Heisenbergstraße 3 • 70569 Stuttgart

Participation

The workshop is intended for PhD students in Chemistry, Physics and Materials Science. Everyone interested in participating is cordially invited to come to Stuttgart and to attend the school. The participation is free of charge.

More Information and Registration

Please consult our web pages at

www.imprs-am.mpg.de

Contact



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Useful Links

www.stuttgart-tourist.de • www.hotel.de • www.hrs.de
• www.bahn.de • www.vvs.de



Summer School of the
International Max Planck Research School
for Advanced Materials
in cooperation with the
Max Planck - UBC Centre for Quantum Materials

**Scattering methods for the
analysis of the structure
of matter**

September 17 – 20, 2012 • Stuttgart (Germany)

**10 years
IMPRS-AM**



Bundesministerium
für Bildung
und Forschung

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by the Federal Ministry of Education and
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Program • Scattering methods for the analysis of the structure of matter

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Monday, September 17

- 9.00 – 9.15** **Welcome**
(Speaker of the IMPRS)
- 9.15 – 10.00** **Jost Lemmerich (Berlin, D)**
*The discovery of X-ray interference
– who was Max von Laue?*
- 10.15 – 11.45** **Robert Dinnebier, MPI-FKF (Stuttgart, D)**
The role of symmetry in diffraction
- 12.00 – 13.00** Lunch
- 13.00 – 14.30** **Maurits Haverkort, MPI-FKF (Stuttgart, D)**
*Scattering Physics; elastic vs. inelastic;
Bragg vs. diffuse; normal vs. anomalous*
- 14.45 – 15.00** Coffee break
- 15.00 – 15.45** **Jeremy K. Cockcroft, UCL (London, UK)**
*Instrumentation: collecting diffraction data
fit for purpose from X-rays and neutrons*
- 16.00 – 16.45** **Fritz Phillip, MPI-IS (Stuttgart, D)**
Instrumentation: electron microscopy
- 17.00 – 17.45** **Oliver Oeckler, Uni. Leipzig (Leipzig, D)**
Single crystal structure analysis

Tuesday, September 18

- 9.00 – 9.45** **Andreas Leineweber, MPI-IS (Stuttgart, D)**
Powder diffraction
- 10.00 – 10.45** **Andreas Stierle, DESY (Hamburg, D)**
Surface sensitive X-ray diffraction methods
- 11.00 – 11.45** **Simon L. Billinge, Columbia Univ. (New York, USA)**
Scattering from amorphous materials
- 12.00 – 13.00** Lunch

- 13.00 – 13.45** **Simon L. Billinge, Columbia Univ. (New York, USA)**
Local structure analysis by total scattering
- 14.00 – 14.45** **Holger Klein, CNRS (Grenoble, F)**
Structure solution by electron diffraction
- 15.00 – 15.45** **Poul Norby, DTU (Roskilde, DK)**
Special in-situ techniques in powder diffraction
- 16.00 – 16.30** Coffee break

16.30 – 21.00 Late Night Session

- Kou Takubo**
*Orbital states of V trimers in BaV₁₀O₁₅
detected by resonant X-ray scattering*
- Sebastian Macke**
*Non-destructive, element specific density
depth profiling by resonant X-ray reflectometry*
- Riccardo Comin**
*Surface-bulk dichotomy in single-layered
Bi-based cuprates*
- Ludivine Chauviere**
*High temperature superconductivity - growing
TI-2201 crystals to test pairing models in cuprates*

- 18.00 – 21.00** Dinner (room 2 D8, Plüschraum)

Wednesday, September 19

- 9.00 – 9.45** **Gernot Kostorz, ETH (Zürich, CH)**
Small-angle scattering of X-rays and neutrons
- 10.00 – 10.45** **Hartmut Zabel, RUB (Bochum, D)**
X-ray and neutron reflectivity
- 11.00 – 11.45** **Vladimir Hinkov, UBC (Vancouver, CA)**
*Elastic and inelastic scattering from
magnetic materials*
- 12.00 – 13.00** Lunch

- 13.00 – 13.45** **Maurits Haverkort, MPI-FKF (Stuttgart, D)**
Resonant soft X-ray scattering

- 14.00 – 14.45** **Wolfgang Ludwig, ESRF (Grenoble, F)**
*Characterization of the 3D grain micro-
structure in polycrystalline materials by
combined use of synchrotron X-ray imaging
and diffraction techniques*

- 15.00 – 15.15** Coffee break

- 15.15 – 16.00** **Ian Robinson, UCL (London, UK)**
*Coherent X-ray diffraction imaging of
strain fields associated with alloying*

- 16.15 – 17.00** **Harald Reichert, ESRF (Grenoble, F)**
Short range order in crystalline materials

Thursday, September 20

- 9.00 – 9.45** **Eric J. Mittemeijer, MPI-IS (Stuttgart, D)**
Diffraction analysis of nanosized materials
- 10.00 – 10.45** **Paolo Scardi, Univ. of Trento (Trento, I)**
Line-profile analysis
- 11.00 – 11.45** **Wolfgang Pantleon, DTU (Lyngby, DK)**
*Strain and defect structure in
individual subgrains*

- 12.00 – 13.00** Lunch

- 13.00 – 13.45** **Simone Techert, MPI-PC (Göttingen, D)**
*Femtosecond time-resolved X-ray diffraction
for studying crystalline structural dynamics*

- 14.00 – 14.45** **Christoph Genzel, HMI (Berlin, D)**
*Residual stress and its analysis
by diffraction methods*

- 15.00 – 15.45** **Heinz-Günter Brokmeier, TU Clausthal (Clausthal, D)**
Texture analysis

- 16.00** **Final remarks**