

M.Sc. Physics

M.Sc. Applied Physics

Info, questions, answers...

Albert-Ludwigs-Universität Freiburg



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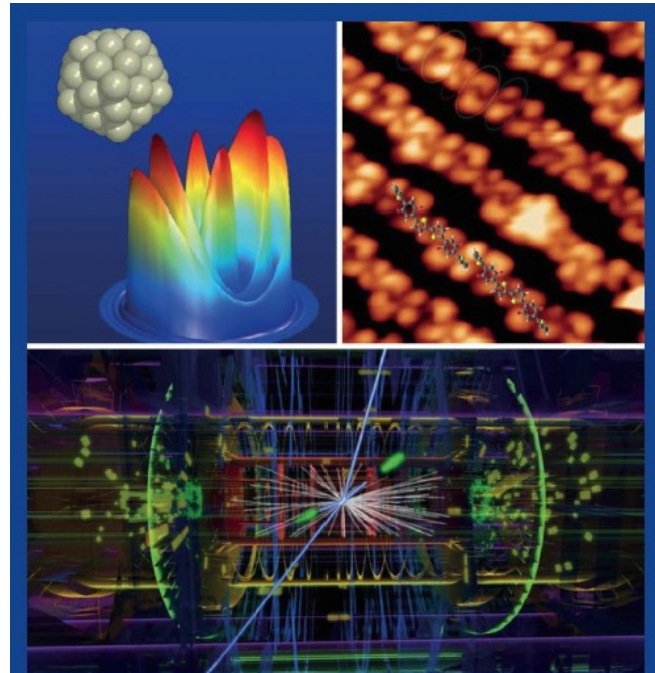
09.05.2022

PD Dr. Markus Walther

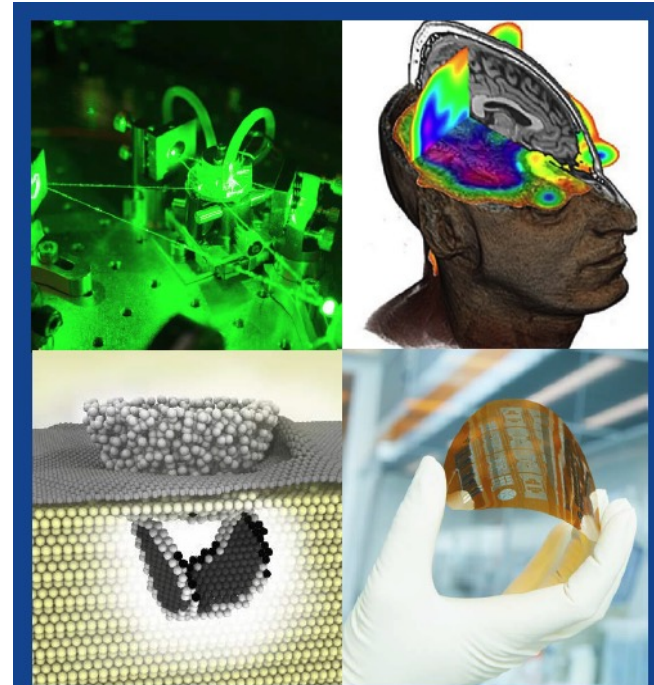
Master programs in Freiburg



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Master of Science (M.Sc.)
Physics



Master of Science (M.Sc.)
Applied Physics

Final Exams - PL vs SL



Prüfungsleistung (PL) / graded exam

- registration required
- **Exam with grade**
(contributes to final grade)
- failed exam must be repeated
- max 2 repetitions (3 tries)
exception:
Term Paper, Master Lab,
Master Thesis (only 1 repetition!)
- Course can not be changed after
final exam registration!

Studienleistung (SL) / non-graded exam

- registration required
- just **pass** or **fail**
- failed exam can be repeated
- infinite repetitions

Program – MSc Physics



| Module | Type | Contact hours | EC TS | Compul- sory/ Elective | Recom- mended semester | Assessment |
|----------------------------|----------|---------------|---------|------------------------|------------------------|--------------------------------|
| Advanced Quantum Mechanics | L+E | 4+3 | 10 | C | 1 or 2 | PL: written |
| Advanced Physics 1 | L+E | 4+2 | 9 | E | 1 or 2 | PL: written or oral |
| Advanced Physics 2 | L+E | 4+2 | 9 | E | 1 or 2 | PL: written or oral |
| Advanced Physics 3 | L+E | 4+2 | 9 | E | 1 or 2 | SL |
| Elective Subjects | variable | variable | 9 | E | 1 or 2 | SL |
| Term Paper | S | 2 | 6 | E | 1 or 2 | PL: written or oral |
| Master Laboratory | Lab | 10 | 8 | C | 1 or 2 | PL: written or oral |
| Research Traineeship | - | - | 30 | C | 3 | SL |
| Master Thesis | - | - | 28 2 | C | 4 | PL: Thesis SL: Presentation |

Abbreviations in table:

Type = type of course; L = lecture; E = exercises; S = seminar; Lab = laboratory;

C = compulsory module; E = elective module;

SL = assessed coursework ('Studienleistung'); PL = exam ('Prüfungsleistung')

Program – MSc Physics



Recommendation for start in winter semester:

| FS | Module | | | | | Σ ECTS |
|----|---|----------------------------|--|--------------------|---------------------------|-----------|
| 1 | Advanced Quantum Mechanics 10 CP | Advanced Physics 1 9 CP | | Term Paper 6 CP | Master Laboratory 8 CP | 33 |
| 2 | | Advanced Physics 2 9 CP | Elective Subjects Advanced Physics and/or other discipline by own choice 9 CP | | | 27 |
| | | Advanced Physics 3 9 CP | | | | |
| 3 | Research Traineeship 30 CP | | | | | 30 |
| 4 | Master Thesis (Thesis and Presentation) 30 CP | | | | | 30 |

(for start in summer semester change 1st and 2nd semester)

Program – MSc Applied Physics



| Module | Type | Lecture hours | EC TS | Compulsory/ Elective | Recommended semester | Assessment |
|-----------------------------------|----------|---------------|---------|----------------------|----------------------|--------------------------------|
| Advanced Experimental Physics | L + E | 4 + 2 | 9 | E | 1 or 2 | PL written or oral |
| Advanced Theoretical Physics | L + E | 4 + 2 | 9 | E | 1 or 2 | PL written or oral |
| Applied Physics | L + E | variable | 18 | E | 1 or 2 | PL written or oral |
| Elective Subjects | variable | variable | 10 | E | 1 or 2 | SL |
| Term Paper | S | 2 | 6 | E | 1 or 2 | PL written and oral |
| Master Laboratory Applied Physics | Lab | 10 | 8 | C | 1 or 2 | PL written and oral |
| Research Traineeship | - | - | 30 | C | 3 | SL |
| Master Thesis | - | - | 28 2 | C | 4 | PL: Thesis SL: Presentation |

Abbreviations in table:

Type = Type of course; L = Lecture; E = Exercises; S = Seminar; Lab = Laboratory;

C = Compulsory module; E = Elective module;

PL = exam ('Prüfungsleistung'); SL = assessed coursework ('Studienleistung')

Program – MSc Applied Physics



Recommendation for start in winter semester:

| FS | Module | | | | | Σ ECTS |
|----|--|--|--|------------------------------------|---|------------------|
| 1 | Advanced Experimental Physics 9 ECTS points | Applied Physics 18 ECTS points | | Term Paper 6 ECTS points | Master Laboratory Applied Physics 8 ECTS points | 28 |
| 2 | Advanced Theoretical Physics 9 ECTS points | | Elective Subjects 10 ECTS points | | | 32 |
| 3 | Research Traineeship 30 ECTS points | | | | | 30 |
| 4 | Master Thesis (Thesis and Presentation) 30 ECTS points | | | | | 30 |

(for start in summer semester change 1st and 2nd semester)

New: Optional Specializations



- **MSc Physics**
„Atomic, Molecular and Optical Physics“
„Particle Physics“
- **MSc Applied Physics**
„Quantum Sciences and Technology“

Experimental Physics

- Advanced Optics and Lasers (Exp, SoSe)
- Quantum Hardware (Exp, SoSe)

Theoretical Physics

- Classical Complex Systems (Theo, WiSe)
- Quantum Optics (Theo, WiSe)
- Complex Quantum Systems (Theo, SoSe)
- Theoretical Condensed Matter Physics (Theo, SoSe)
- Quantum Information Theory (Theo, SoSe)

Check Modul
Handbook!

Modules



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- **Lecture Courses**
(lectures, excercises, final exam)
- **Term Paper Seminar**
(oral presentation, written report)
- **Master Laboratory**
MSc Physics:
block lab course (4 weeks), Feb/March, registration in Nov/Dec
see website <http://www.physik.uni-freiburg.de/studium/labore/>
- MSc Applied Physics:
6 experiments distributed over first year
see website <http://www.physik.uni-freiburg.de/studium/labore/>

Course Catalog



<https://www.physik.uni-freiburg.de/studium/vorlesungsverzeichnis>

Master-of-Science (M.Sc.) Physics

Compulsory Lecture

| | SWS | CP | Zeiten | Raum | Dozent | Beginn |
|--|-----|----|--------------|-------------------------------|--------|------------|
| Advanced Quantum Mechanics | 4 | 10 | Mi, Fr 10-12 | HS I ILIAS | Breuer | 20.10.2021 |
| Tutorials | 3 | | n.V. | | | |

Advanced Physics 1-3 (Theory)

| | SWS | CP | Zeiten | Raum | Dozent | Beginn |
|--|-----|----|-----------------------|--|--------------------------|------------|
| Introduction to General Relativity | 4 | 9 | Do 10-12, Fr 14-16 | Do SR I, Fr HS I ILIAS | Dittmaier, Stahlhofen | 21.10.2021 |
| Tutorials | 2 | | Mo 14-16 | SR I | | |
| Classical Complex Systems | 4 | 9 | Di, Do 12-14 | SR WB 2.OG ILIAS | Dzubiella | 19.10.2021 |
| Tutorials | 2 | | n.V. | | | |
| Theoretical Quantum Optics | 4 | 9 | Mi, Do 14-16 | HS I ILIAS | Carnio, Buchleitner | 20.10.2021 |
| Tutorials | 2 | | n.V. | | | |

Advanced Physics 1-3 (Experiment)

| | SWS | CP | Zeiten | Raum | Dozent | Beginn |
|---|-----|----|--------------|---------------------------------|--------------|------------|
| Particle Detectors | 4 | 9 | Di, Do 10-12 | SR GMH ILIAS | Herten | 19.10.2021 |
| Tutorials | 2 | | n.V. | | | |
| Advanced Atomic and Molecular Physics | 4 | 9 | Di, Do 10-12 | HS II ILIAS | Stienkemeier | 19.10.2021 |

Online Registration / HISinOne

<https://campus.uni-freiburg.de>



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walther

Login

[Lost login data?](#)

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Campus Management - HISinOne

Albert-Ludwigs-Universität Freiburg

Application Studies offered Organisation Help

Startpage Applicants Students Guest Auditors International Incomings Doctoral Candidates Lecturers Employees

Choose your portal



Applicants
You want to study and to apply for a study place.



Students
You are already a student and want to register for courses or check your marks.



Guest Auditors
You are registered as guest auditor and want to search and/or register for courses offered for you.



International Incomings
You are EUCOR, ERASMUS, University of Freiburg Global Exchange or Free Mover Incoming.



Doctoral Candidates
You are a doctoral candidate at the University of Freiburg or want to become one.



Lecturers
You are a lecturer and want to manage courses or edit grades.



Employees
You are an employee and want to manage courses or administrate examinations or participate in a training.

Quicklinks

Search for courses

Courses institution-wide

Show university course catalog

Show university course catalog

Show current courses

Cancelled und proceeded courses, changes

Search for rooms

Räume suchen und auf dem Stadtplan anzeigen lassen

Search for persons

Help

HISinOne Manual

Status student application portal

✓ Green: all functions of the application portal are normally available

Online Registration / HISinOne



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search menu

29

Demo - HISinOne

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- My Studies
- Studies offered
- Organisation
- User information
- Help
- Bookmarks

You are here: Home > My Studies > Planner Of Studies with module plan

Planner Of Studies with module plan Master of Science, Physik, Hauptfach, PO 2015

Show module plan → Select another course of study Printview

Help

Semester: winter semester 2019

Hide lectures Hide examinations and non-graded works

Search in course catalog

Expand all Collapse all

Structure of examination regulations - All subject related semesters

Actions

Status

07LE33PO-MSc-2015 - Physik, M.Sc., PO 2015

+ 07LE33M-AQM - Module: Advanced Quantum Mechanics - 10.0 ECTS

- 07LE33K-ADV_PHYS1 - Module: Advanced Physics 1 - 9.0 ECTS

+ 07LE33M-ADV_EXP_AMO - Advanced Atomic and Molecular Physics - 9.0 ECTS

+ 07LE33M-ADV_EXP_OL - Advanced Optics and Lasers - 9.0 ECTS

- 07LE33M-ADV_EXP_CM1 - Condensed Matter Physics I: Solid State Physics - 9.0 ECTS

+ 07LE33V-ADV_EXP_CM1 - Condensed Matter Physics I: Solid State Physics - lecture course - 9.0 ECTS

apply

+ 07LE33Ü-ADV_EXP_CM1 - Condensed Matter Physics I: Solid State Physics - exercise course

+ 07LE33SL-ADV_EXP_CM1 - Condensed Matter Physics I: Solid State Physics - 9.0 ECTS (1 of 2)

enroll

+ 07LE33PL-ADV_EXP_CM1 - Condensed Matter Physics I: Solid State Physics - 9.0 ECTS (1 of 2)

enroll

+ 07LE33M-ADV_EXP_CM2 - Condensed Matter Physics II: Interfaces and Nanostructures - 9.0 ECTS

+ 07LE33M-ADV_EXP_PP - Advanced Particle Physics - 9.0 ECTS

signing-in for courses
(available now)

enrolment for exams
(available later)

Teaching Platform / ILIAS

https://ilias.uni-freiburg.de



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Zentrale Lernplattform der Universität Freiburg
Albert-Ludwigs-Universität Freiburg

✉ 17 👤 0 🔍 Hilfe

PERSÖNLICHER SCHREIBTISCH ▾ MAGAZIN ▾ SUPPORT ▾

Übersicht

Aktionen ▾

Ihre Online-Evaluationen

Was bedeutet diese Box?

Keine offenen Onlineumfragen.

Neuigkeiten - Letzte Woche

(1-5 von 13) weiter

Forum: Fragen zu Ilias

14 Beiträge hinzugefügt.

Kurs: Humanmedizin 1. Studienabschnitt

Es wurden 5 Dateien hinzugefügt.

Kurs: Humanmedizin 1. Studienabschnitt
Lernort mit stabilem w-lan (Zugang über
eduroam), auch zum Verfolgen von online-
Veranstaltungen

Forum: Forum für Fragen zum digitalen
Studienstart // Discussion Forum: Any Questions
about your "digital start" at the University?
16 Beiträge hinzugefügt.

Wiki: Werkzeugkasten "Digitale Lehre"
BigBlueButton



Ausgewählte Angebote

3. Advanced Experiment



Hadron Collider Physics 2020



3. Advanced Experiment



Master Laboratory Applied Physics - Lab 5 - Measuring the Rotation of the Sun



Physics of Clusters and Nanoparticles



Trapping - Cooling - Quantum Control (Summer 2020)



5. Elective Subjects



Physics of Nano-Biosystems SS 2019



5. Elective Subjects



Quantum Field Theory in Curved Spacetime



Quantum Magnetism at the Nano Scale SS20



Phvsikalisches Praktikum für Studierende der Medizin und Zahnmedizin (WS 2020/2021)

Kalender

◀ Okt 2020 ▶

| Mo | Di | Mi | Do | Fr | Sa | So |
|----|----|----|----|----|----|----|
| | | | 1 | 2 | 3 | 4 |
| 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| 19 | 20 | 21 | 22 | 23 | 24 | 25 |
| 26 | 27 | 28 | 29 | 30 | 31 | |

iCal

Meine Portfolios

Portfolio hinzufügen

Notizen

0 Notizen

Mail

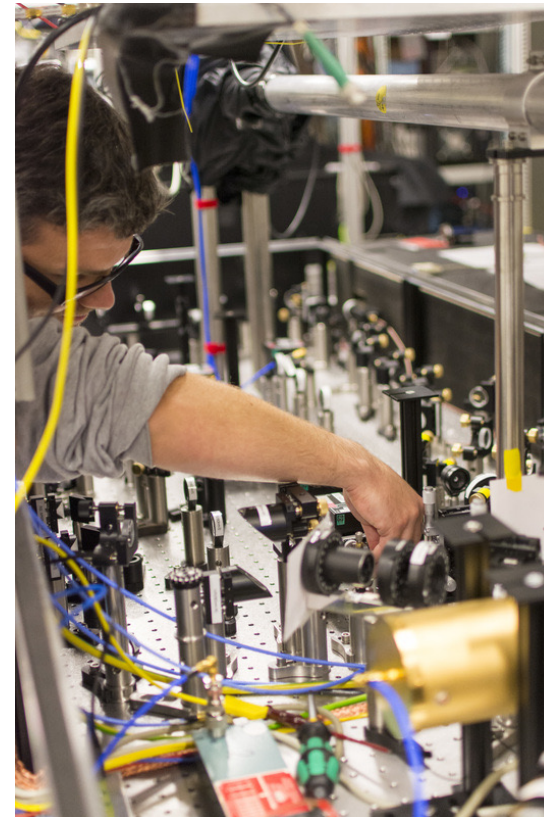
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Research Traineeship & Master Thesis



One year Research Phase:

- **Research Traineeship (6 months)**
- **Master Thesis (6 months)**
Thesis and Colloquium (defense)



Requirements:

- Master Lab
- 3 out of 4 PLs

MSc Physics: AQM, Adv Phys 1 and 2, Term Paper

MSc Applied Physics: Adv Exp, Adv Theo, Applied Phys, Term Paper

Research traineeship & Master Thesis



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Uni Freiburg (Institutes):

- Mathematics
- Chemistry
- Biology (Neuroscience)
- University Hospital (Medical Physics)
- Technical Faculty (IMTEK)



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Leibniz Institute:

Kiepenheuer Institute
for Solar Physics



Physikalisches Institut



Fraunhofer Institutes:

- ISE (Solar Energy)
- IWM (Materials Research)
- IAF (Solid State Physics)
- IPM (Measurement Techniques)
- EMI (High-Speed Dynamics)



Research Centers of Uni Freiburg :

- FMF (Materials Research)
- FIT (Interactive / Bioinspired Materials)
- BIOSS (Biological Signalling Studies)
- FDM (Data Analysis)
- FRIAS (Advanced Studies)

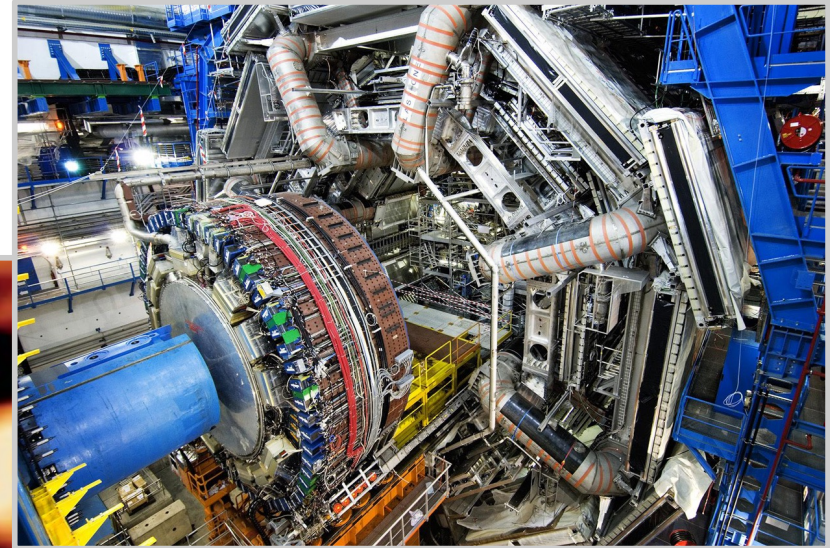
„external“ thesis
(at other institution)

Research traineeship & Master Thesis



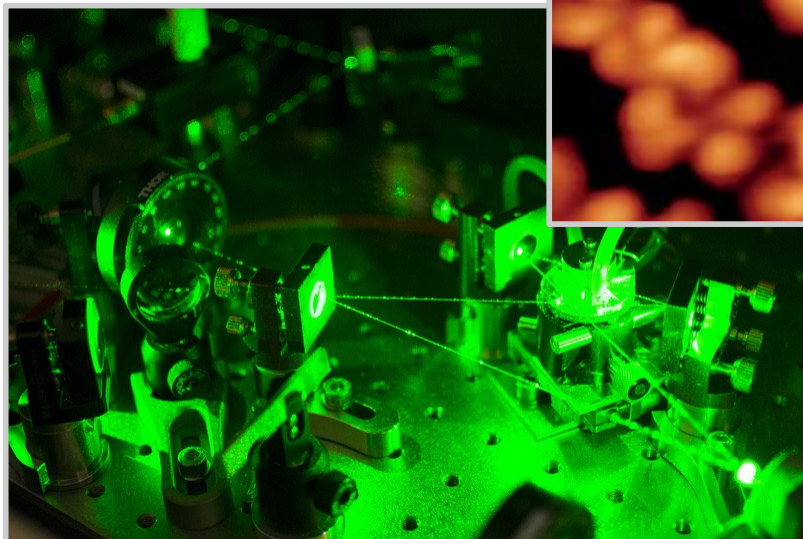
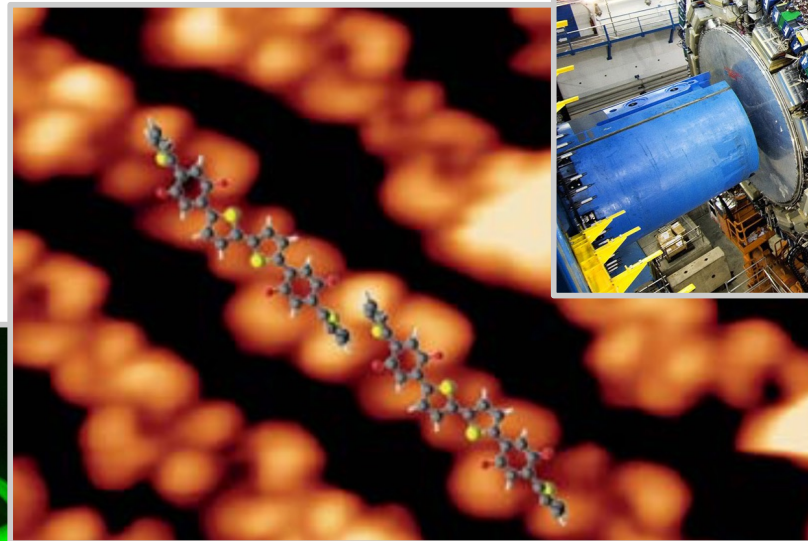
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Condensed Matter and Applied Physics



Particles, Fields, Cosmos

Atomic, Molecular and Optical Physics



Poster presentations on research topics and available thesis projects: end of winter semester (Jan/Feb)

Last event Wed 11.05.2022

<https://www.physik.uni-freiburg.de/aktuelles/portalnews/saeulenveranstaltung2022>

Physics Colloquium

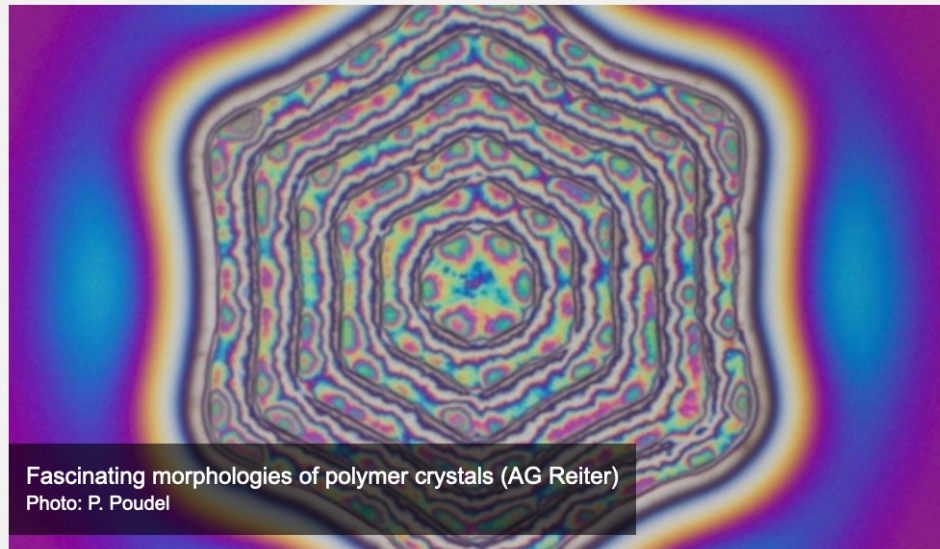
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Welcome to the Institute of Physics



Fascinating morphologies of polymer crystals (AG Reiter)
Photo: P. Poudel

Popular links

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Physics Colloquium
09.05.2022, 17:15 Uhr
"The Principle of Global Relativity"

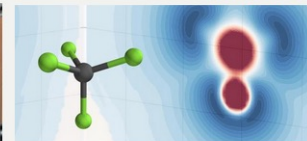
Jochum van der Bij
University of Freiburg
[More lectures...](#)



Presentation of research topics at the Institute of Physics

The research groups introduce their research and offer potential BSc and MSc thesis topics. (dates: 27.04., 04.05. and 11.05.2022)

[Read more...](#)



Complex pathways influence time delay in ionization of molecules

A team led by Prof. Giuseppe Sansone demonstrates how to use the mechanism of photoionization to gain insight into complex molecular potential. They published their findings in the journal Nature

each Monday
during semester



Fachschaft Physik



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Barbecue:

Thursday May, 12 at 18:00
in physics garden

