MAX PLANCK INSTITUTE
for the science of light

Newsletter

nº12 | April 2018

CENTRE FOR PHYSICS AND MEDICINE: SIGNING THE AGREEMENT

In a ceremony on July 25, 2017 the Max Planck Society (MPG), the Friedrich Alexander University (FAU) and the University Hospital in Erlangen signed an agreement to form a new joint Centre for Physics and Medicine (ZPM). ZPM will host a fifth MPL division and a selection of MPL's activities in biomedical research. FAU will be represented by new chairs in biophysics, biomathematics and medical physics. In addition, two independent research groups (non-tenure-track assistant professorships) will be financed by MPG and the University Hospital, while the plan is to host three further such groups, funded externally. ■

Seated, from left to right: Joachim Hornegger, President of the FAU; Martin Stratmann, President of the MPG; Albrecht Bender, Commercial Director of Erlangen University Hospital; Rüdiger Willems, Secretary General of the Max Planck Society; and Heinrich Iro, Medical Director and CEO of Erlangen University Hospital. Standing, from left to right: Jürgen Schüttler, Dean of the Medical Faculty of the University of Erlangen; the Directors of MPL Vahid Sandoghdar, Florian Marquardt and Philip Russell; Ilse Aigner, Bavarian Minister of Economic Affairs, Media, Energy and Technology; and Florian Janik, Mayor of Erlangen.

Inside THIS ISSUE

LONG NIGHT OF SCIENCE OPENING CEREMONY AT MPL

The sixth "Long Night of Science", which took place October 21-22, 2017 in Nürnberg, Fürth and Erlangen, was again a great success. Science-curious visitors came to find out what the local universities, research institutions and companies are up to. MPL also opened its doors, offering demonstrations of the fascinating effects that can be produced with light. The opening ceremony was held at MPL. Markus Söder, Bavarian minister of state for finance, state development and homeland, Joachim Hornegger, president of FAU, Michael Braun, president of the TH Nürnberg, Ralf Garbiel, CEO of Kulturidee and Gerd Leuchs participated in the formal opening. ■

Message FROM THE DIRECTORS

An eventful year has passed since the last MPL Newsletter. In March 2017 we were visited by our Scientific Advisory Board, whose task it is to examine not only the quality of our research, but also issues related to technical infrastructure, administration, gender balance and the well-being of our students and postdocs. We are happy to report that we passed with flying colours.

On July 25, 2017 MPL signed an agreement to establish a Zentrum für Physik und Medizin (ZPM), in cooperation with FAU and the University Hospital in Erlangen. As a result we are in the process of hiring a fifth MPL director to strengthen our activities at the interface between physics and fundamental medical research.

October 4-6, 2017, MPL's fourth Autumn Academy introduced selected university students from Germany and abroad to the excitement of the optical sciences. A few weeks later, MPL hosted the grand opening ceremony of the Long Night of the Sciences, a biennial event held in Nuremberg, Fürth und Erlangen, attracting thousands of visitors.

MPL's successes continued with the award of an independent Max Planck Research Group to Silvia Viola-Kusminskiy, the 2018 OSA-DPG Herbert Walther Award to Gerd Leuchs, and the 2018 Rank Prize for Optoelectronics to Philip Russell.

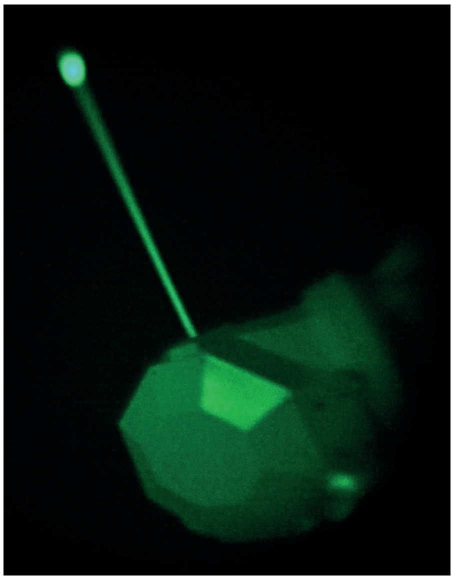
Several symposia and workshops took place in MPL's new building, benefitting from its wonderful facilities. Continuing this trend, we will be holding a Symposium on the Science of Light in July 2018 to celebrate 1.5 years of our new building, 15 years of Max Planck activities and 150 years since Eugen Lommel, whose speciality was optics, was appointed Professor of Physics. We hope to meet many friends and colleagues at this event.

GERD LEUCHS
PHILIP RUSSELL
VAHID SANDOGHDAR
FLORIAN MARQUARDT

RESEARCH *articles*

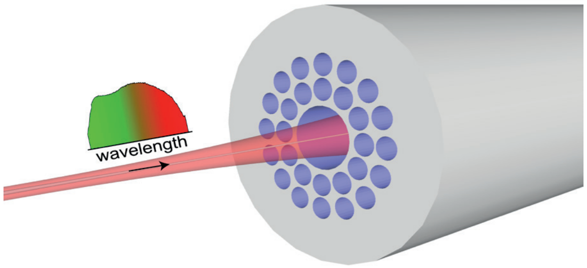
SHORT-CUT TO A SATELLITE-BASED QUANTUM ENCRYPTION NETWORK

▸ Today's encryption techniques, whose security relies on assumptions about the complexity of mathematical problems, could be cracked by a quantum computer. In contrast, quantum key distribution (QKD) exploits quantum mechanical concepts and so is secure against arbitrary attacks on an information-theoretic level, even against attacks involving quantum computers. QKD protocols have already been implemented in metropolitan networks all around the world, but connections over longer distances have not yet been possible. A promising approach to extending QKD is optical satellite communication, and an important step towards this objective is precise characterisation of the quantum noise behaviour of the system, including the channel. In close collaboration with Tesat-Spacecom and the German Aerospace Centre (DLR), we have performed measurements on light sent by a satellite in geostationary Earth orbit, over a distance of some 38,600 kilometres. We showed that the received quantum states are nearly quantum noise limited. These new results show that quantum communication satellite networks do not need to be designed from scratch, but can be based on already space-proof satellite communication technology, greatly reducing development time. ■



Contact: christoph.marquardt@mpl.mpg.de
Group: *Leuchs Division*
Reference: K. Günthner et al., Optica **4**, 611 (2017);
http://doi.org/10.1364/OPTICA.4.000611

BROADBAND AND SELF-ALIGNED COUPLING INTO OPTOFLUIDIC HOLLOW-CORE PHOTONIC CRYSTAL FIBRES

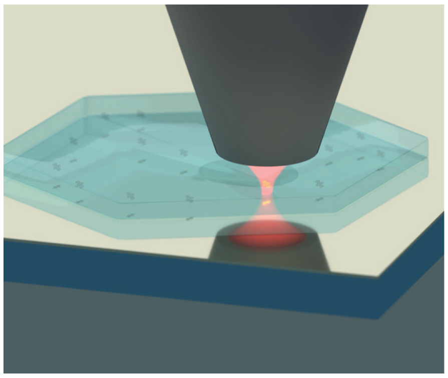


▸ Liquid-core waveguides, such as optofluidic hollow-core photonic crystal fibres (HC-PCFs), provide a versatile platform for a variety of applications in the life sciences. For certain experiments, efficient coupling of broadband laser light into specific core modes is desirable. We recently demonstrated that the tip of a tapered single mode fibre, a "nanospike", inserted into the core of an optofluidic HC-PCF enables coupling to the fibre modes over a bandwidth of 500 nm with efficiencies of ~40%. Moreover, a powerful trapping laser at a single wavelength, launched in addition to the broadband signal, can opto-mechanically trap and self-align the nanospike at core centre, reducing the requirements on manual alignment and stabilizing the coupling against external perturbations. This approach can be generalized to almost all hollow waveguides and thus is attractive for the realization of lensless and all-fibre based "lab-on-chips". ■

Contact: richard.zeltner@mpl.mpg.de
Group: *Russell Division*
Reference: R. Zeltner et al., ACS Phot. **4**, 378 (2017);
http://doi.org/10.1021/acsphotonics.6b00868

COHERENT COUPLING OF A SINGLE MOLECULE TO A SCANNING FABRY-PEROT MICROCAVITY

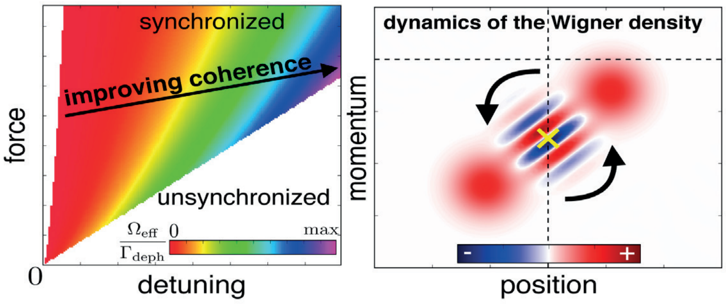
Physicists in many research areas aim to realize efficient devices that can generate intricate quantum states and perform complex operations. Considering that photons are ideal carriers of quantum information while material entities are advantageous for switching and storage, the efficient interaction of single photons and single material systems becomes a key issue for the success of these efforts. Recently we have investigated the enhancement of the coupling efficiency between light and an organic molecule by employing an ultrasmall cavity. We doped single aromatic hydrocarbon dye molecules into a thin organic crystal and placed it in a Fabry-Perot cavity containing a mirror with a radius of curvature of 5 µm. By tuning the cavity on and off the molecular resonance, we showed that a single molecule could attenuate 38% of the light entering the microresonator. Furthermore, we exploited this efficient coupling to demonstrate controllable switching of a light beam from attenuation to amplification via stimulated emission. We also discussed the prospects of mechanical actuation of molecular emission via the microcavity. ■



Contact: daqing.wang@mpl.mpg.de
Group: *Sandoghdar Division*
Reference: D. Wang et al., Phys. Rev. X **7**, 021014 (2017); https://doi.org/10.1103/PhysRevX.7.021014

QUANTUM-COHERENT PHASE OSCILLATIONS IN SYNCHRONIZATION

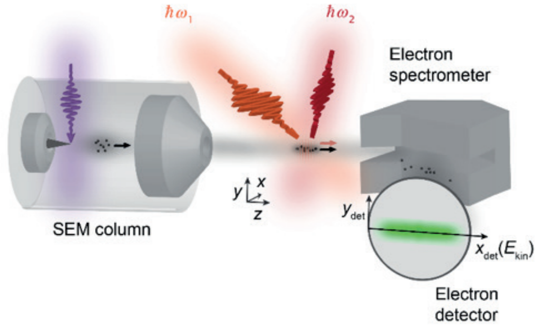
Synchronization is a universal phenomenon, appearing in many nonlinear systems both in nature and technology. It is commonly studied in so-called limit-cycle oscillators that feature a free phase, which allows them to synchronize to an external reference or another limit-cycle oscillator. Recently, synchronization in quantum systems has been studied intensively. However, the dynamics observed so far was always incoherent, classical-like. We have recently shown that a regime of synchronization dynamics also exists, where the phase displays quantum-coherent oscillations. To this end, we have derived an effective quantum model, which allows us to predict where the decoherence rate becomes sufficiently small to preserve quantum states over many oscillations of the system. The identification of this quantum-coherent regime opens up possibilities for future studies exploring genuine quantum behaviour in synchronization. Our study is based on a quantum version of the Van der Pol oscillator, which serves as a paradigm for limit-cycle oscillators. Experimental implementations can thus be envisaged on various platforms, e.g., with optomechanical systems, trapped atoms/ions, or superconducting microwave circuits. ■



Contact: talitha.weiss@mpl.mpg.de
Group: *Marquardt Division*
Reference: T. Weiss et al., Phys. Rev. A **95**, 041802(R) (2017); https://doi.org/10.1103/PhysRevA.95.041802

ELECTRONS SURF A LIGHT WAVE

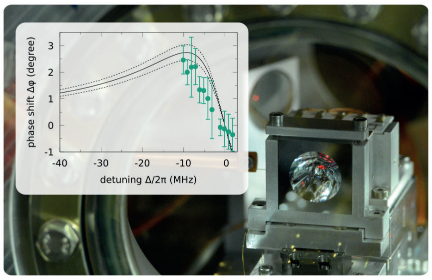
Similar to surfers using the energy stored in sea waves to drive their motion towards the coast, elementary particles can surf a wave formed by tailored light fields. In a paper just published in Nature Physics, scientists from the Hommelhoff Associated MPL Research Group have shown that the kinetic energy of electrons can be modulated on very short timescales by the interaction with an optical travelling wave. The wave is generated in vacuum by two colliding laser pulses with different colors, see figure. This novel way of ultrafast control of the electron motion brings about a new possibility of generating of electron pulses with a duration of only a few hundreds of attoseconds in duration (1 as=10^{-18} s). This is of high interest for studying the fastest phenomena occurring in nature with atomic spatial resolution. Apart from ultrafast physics, the demonstrated interaction is interesting for physics and applications dealing with the acceleration of electrons via their interaction with laser fields due to the demonstrated very high acceleration gradient of more than 2 GeV/m. ■



Contact: peter.hommelhoff@fau.de
Group: *Peter Hommelhoff Group (MPL Associated Group at FAU)*
Reference: M. Kozák et al., Nat. Phys. (2017); http://doi.org/10.1038/nphys4282

DISPERSIVE INTERACTION OF LIGHT AND A SINGLE ATOM

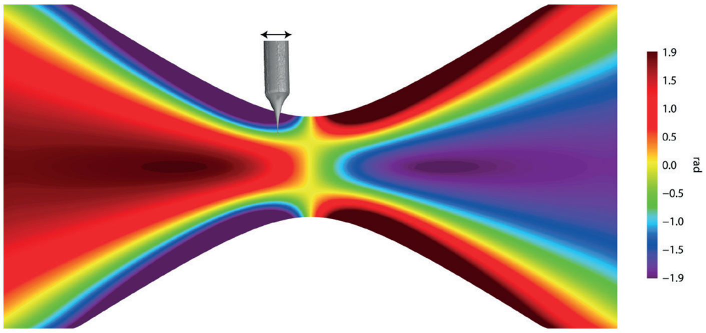
On the macroscopic scale, the dispersive interaction of light and matter is witnessed in the delay of a light wave as it traverses a medium with a refractive index differing from unity. On the microscopic scale, e.g., when studying the interaction of light and a single atom, the refractive index is not well defined. In this case, the important parameter is the phase shift that the atom imprints on to a coherent light pulse. We have analysed such a scenario by tightly focusing light onto a single Yb+ ion and observed phase shifts of 2.2°. The tight focusing is realized using a parabolic mirror that is much deeper than its focal length and placing the ion at the focal spot of this mirror. Currently, the observed phase shifts are limited by structural errors in the mirror, residual motion of the trapped ion, and the internal level structure of the atomic species used. Nevertheless, the current values are already among the largest observed so far in a free-space set-up. ■



Contact: markus.sondermann@mpl.mpg.de
Group: *Leuchs Division (4piPAC)*
Reference: M. Fischer et al., Appl. Phys. B **123**, 48 (2017); http://doi.org/10.1007/s00340-016-6609-3

TRACING THE PHASE OF FOCUSED BROADBAND LASER PULSES

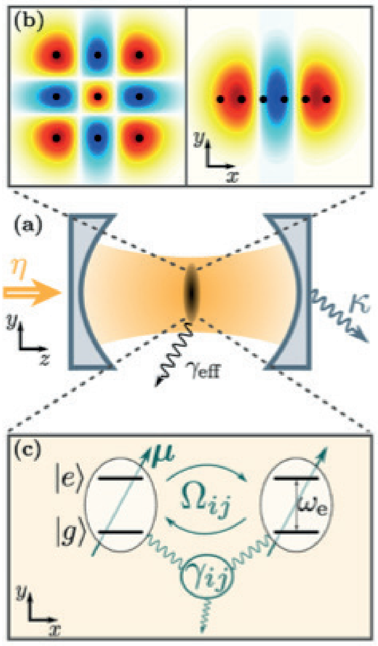
When a beam of light is focused, the optical phase of the light waves exhibits a longitudinal phase difference compared to a plane wave. This phase difference is commonly known as the Gouy phase, first described and experimentally demonstrated by Louis Gouy more than 100 years ago. Today, broadband laser signals, for example in the form of femtosecond laser pulses, are often used. In recent work we have measured the focal phase of focused broadband light and shown that the optical phase exhibits much richer behaviour than the Gouy phase, which strictly only holds for monochromatic, continuous-wave laser beams. The experiment is based on raster scanning the focal region of a beam of 4-fs laser pulses with the sharp tip of a metal needle. Carrier-envelope phase-sensitive electron spectra allow the optical phase to be measured at each position within the focal region. The work has direct ramifications in any process sensitive to the optical phase, such as high harmonic and attosecond pulse generation or coherently driven quantum emitters. ■



Contact: peter.hommelhoff@fau.de
Group: *Peter Hommelhoff Group (MPL Associated Group at FAU)*
Reference: D. Hoff et al., Nat. Phys. **13**, 947 (2017); http://doi.org/10.1038/nphys4185

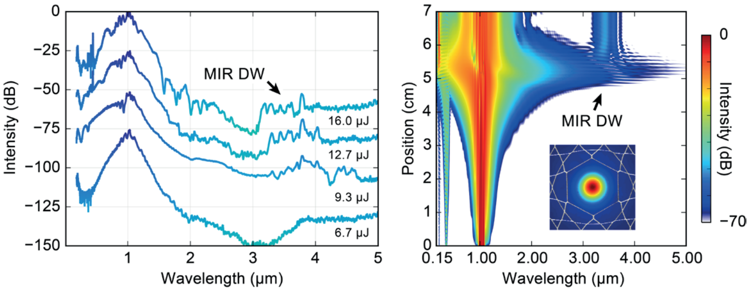
CAVITY ANTIRESONANCES WITH SUBRADIANT COLLECTIVE STATES

The regime of large cooperativity in cavity quantum electrodynamics requires that the light-matter coherent exchange rate dominates over cavity or emitter dissipation rates. Despite the fact that both the coherent and incoherent rates depend on the dipole matrix element of the emitter, the cooperativity turns out to be emitter-independent. Improvements then require either experimental effort (better cavity design, reduced mode waist, improving mirror reflectivity) or scaling up the number of emitters N, achieving a linear increase with N. In a theoretical study, we have pursued an alternative path by tailoring the collective dipole moment properties of emitter ensembles placed transversely to the cavity axis. This ensures optimal coupling to the cavity mode while the inclusion of dipole-dipole interactions leads to a reduced spontaneous emission rate (subradiance) to modes orthogonal to it. The effective cooperativity achieves a supra-linear scaling with N, detectable in the antiresonant behaviour of the cavity output. In the bad-cavity regime, the optical output reveals a narrow intensity dip at the position of a collective resonance and a sharp emitter-induced phase switch, both characterized by a bandwidth proportional to the collective subradiance rate. ■



Contact:: claudiu.genes@mpl.mpg.de
Group: *Genes Research Group*
Reference: D. Plankensteiner et al., Phys. Rev. Lett. **119**, 093601 (2017); http://doi.org/10.1103/PhysRevLett.119.093601

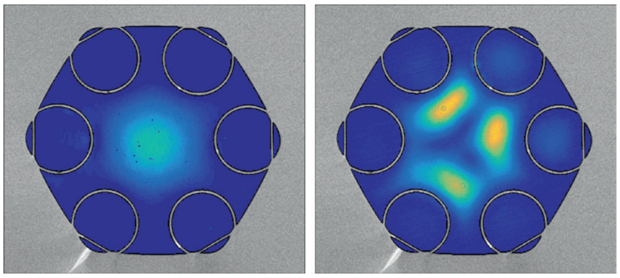
STRONG-FIELD-DRIVEN DISPERSIVE WAVES IN THE MID-INFRARED



Gas-filled hollow-core photonic crystal fibre is being used to generate ever wider supercontinuum spectra, in particular through dispersive wave emission via the optical Kerr effect in the deep and vacuum ultraviolet, with a multitude of applications. Dispersive waves are the result of nonlinear transfer of energy from a self-compressed soliton, a process that relies crucially on phase-matching. It was recently predicted that, in the strong-field regime, the additional transient anomalous dispersion introduced by gas ionization would allow phase-matched dispersive wave generation in the mid-infrared—something that is forbidden in the absence of free electrons. In this work we report the experimental observation of such mid-infrared dispersive waves (MIR DWs), embedded in a 4.7-octave-wide supercontinuum that uniquely reaches simultaneously to the vacuum ultraviolet, with up to 1.7 W of total average power. The plot on the left shows experimental spectra at the fibre output, while the numerically simulated spectral evolution along the fibre is shown on the right. The inset shows the experimental near-field profile of the core mode at the fibre output for wavelengths longer than 3 μm, superimposed on the fibre structure. ■

Contact: felix.koettig@mpl.mpg.de
Group: *Russell Division*
Reference: F. Köttig et al., Nat. Commun. **8**, 813 (2017); http://doi.org/10.1038/s41467-017-00943-4

HIGHER-ORDER MODE SUPPRESSION IN TWISTED SINGLE-RING HOLLOW-CORE PCFS

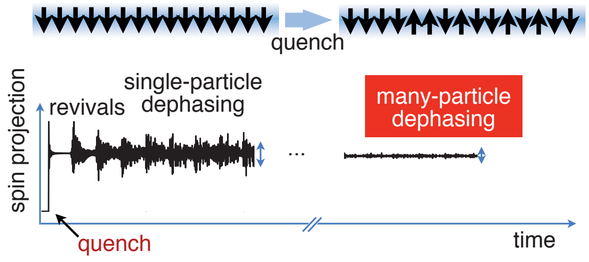


Single-ring hollow-core photonic crystal fibre (SR-PCF) consists of a ring of capillaries, arranged around a central hollow core and mounted inside a hollow cladding capillary. Designed so that the capillary modes are anti-resonant with, i.e., phase mismatched to, the core mode, these fibres can provide ultra-broad-band low-loss guidance with a relatively flat transmission spectrum. We have recently shown that twisting provides a novel additional design tool for controlling the modal properties of SR-PCF. For example, twisting induces a geometrical increase in path-length for the capillary modes, making it possible to phase-match them to an LP_{11}-like core mode, thus providing a leakage channel for the higher-order core mode and rendering the fibre effectively single-mode. Twisting causes the modes to be circularly birefringent, and has a remarkable effect on the transverse intensity profiles of the higher-order core modes, forcing the two-lobed LP_{11}-like mode in the untwisted fibre to become three-fold symmetric in the twisted case. This three-lobed core mode also carries orbital angular momentum. ■

Contact: nitin.edavalath@mpl.mpg.de
Group: *Russell Division*
Reference: N. N. Edavalath et al., Opt. Lett. **42**, 2074 (2017); https://doi.org/10.1364/OL.42.002074

RELAXATION IN QUANTUM MANY-BODY SYSTEMS

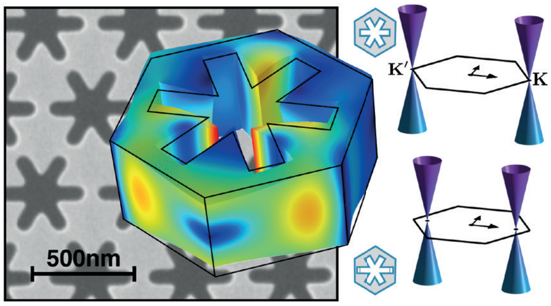
Much of 20th century physics was devoted to understanding the equilibrium properties of materials and physical systems. However, many experimental developments over the past two decades point the way towards entirely new research frontiers in the field of nonequilibrium physics (which is the standard setting in quantum optics and nonlinear optics but can also be induced deliberately in quantum materials). The most elementary scenario in this field involves "quenches", where a sudden change in a system's Hamiltonian shakes up the particles, resulting in a dynamical evolution before the system settles down again. A very fundamental and not yet understood question is how such many-body systems relax back to a steady state. This is usually very hard to answer, because the systems have to be large (making numerical calculations difficult) and non-integrable (no exact solutions). In recent work, we showed that in certain systems that are close to integrable, the long-time fluctuations can be predicted analytically, and we discovered a new generic phenomenon which we termed "many-particle dephasing". ■



Contact: florian.marquardt@mpl.mpg.de
Group: *Marquardt Division*
Reference: T. Kiendl et al., Phys. Rev. Lett. **118**, 130601 (2017); http://doi.org/10.1103/PhysRevLett.118.130601

PSEUDOMAGNETIC FIELDS FOR SOUND AT THE NANOSCALE

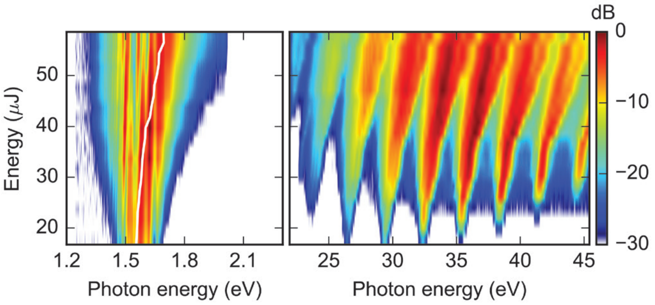
Unlike electrons, phonons do not feel a magnetic field, because they are not charged. As a consequence, much of the interesting physics connected to the behaviour of charged particles in a magnetic field is absent for phonons, be it the Lorentz force or unidirectional transport along the edges of the sample–known from the quantum Hall effect. Over the past two years researchers have started to study how one might make sound waves behave in ways similar to electrons in a magnetic field or related topological settings. In recent work, we showed for the first time how to engineer pseudomagnetic fields for sound waves at the nanoscale. By slightly modifying a platform that has already been fabricated and realised in the context of optomechanics – the snowflake photonic/phononic crystal – Dirac cones that arise in the phononic band structure can be tuned to change their location in the Brillouin zone. This effect can be utilised to generate an effective Hamiltonian for the phonons that has the same structure as the Hamiltonian for electrons in the presence of a magnetic field. ■



Contact: christian.brendel@mpl.mpg.de
Group: *Marquardt Division*
References: C. Brendel et al., Proc. Natl. Acad. Sci. **114**, E3390 (2017); http://doi.org/10.1073/pnas.1615503114

CONTINUOUSLY WAVELENGTH-TUNABLE HIGH HARMONIC GENERATION VIA SOLITON DYNAMICS

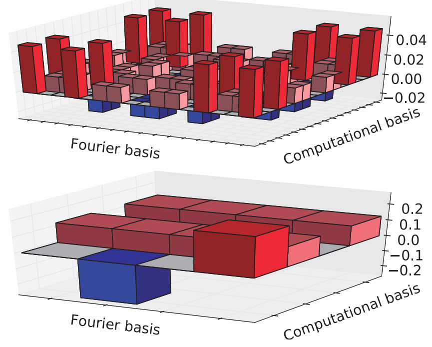
The weak anomalous dispersion in gas-filled hollow-core photonic crystal fiber (HC-PCF) allows access to soliton dynamics over a broad spectral range in the visible and near-infrared regions, providing a powerful means of controlling ultrashort light pulses. Pressure-tunable dispersion adds an additional degree of freedom for manipulating both linear and nonlinear effects. In particular, sub-single cycle pulses produced by soliton self-compression are an ideal pump source for high harmonic generation. We report generation, in an Ar gas jet placed directly at the fibre output, of high harmonics that are continuously frequency-tunable by exploiting the ionization-related soliton blue-shift in a helium-filled HC-PCF. The blue-shift of the pump pulse increases with pulse energy, and is transferred to the high harmonics, resulting in independent continuous tuning of the high harmonics over a frequency range greater than the spacing between neighboring harmonic orders. The result is emission bands continuously tunable from 17 to 45 eV. Further improvements in fibre design are likely to make possible pump pulse durations much shorter than the ~15 fs achieved in the experiments, further improving the efficiency of the process. ■



Contact: francesco.tani@mpl.mpg.de
Group: *Russell Division*
Reference: F. Tani et al., Opt. Lett. **42**, 1768 (2017); http://doi.org/10.1364/OL.42.001768

COARSE GRAINING THE PHASE SPACE OF N QUBITS

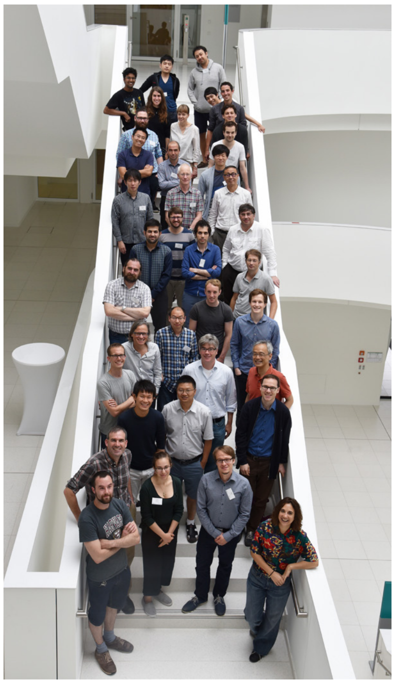
As experimental implementations of quantum systems increase in size, new tomographic techniques are required for efficient measurement and reconstruction of a state. We propose a systematic method for choosing a subset of measurements for the tomography of N-qubit systems. It works by leveraging geometric structures that underlie the discrete phase space in which every point corresponds directly to an observable. Our approach, which we term coarse-graining, averages together lines in this phase space, so as to effectively superimpose on top of it the phase-space structure of a smaller system; in a sense, this mirrors the renormalization group approach of statistical physics. Only a subset of the original observables remains after this procedure, which can be used to compute discrete Wigner functions over the effectively smaller phase space. As pictured, for the four-qubit Dicke state $(|1000\rangle + |0100\rangle + |0010\rangle + |0001\rangle)/2$, "coarse" Wigner functions (bottom) resemble smoothed-out versions of the originals (top), but retain some of the general features, such as substantial positive and negative regions. ■



Contact: lsanchez@ucm.es
Group: *Leuchs Division*
Reference: O. Di Matteo et al., Phys. Rev. A **95**, 022340 (2017); http://doi.org/10.1103/PhysRevA.95.022340

OPTOMAGNONICS WORKSHOP

The first ever workshop on optomagnonics was held at MPL over three days in June 2017. Optomagnonics involves the coherent coupling of light to magnetic excitations in solid state systems, and the first experiments appeared just over a year ago. The emerging field holds great promise for quantum technologies, with potential applications in coherent state transfer, parametric down conversion, and storage of quantum information. The workshop gathered international experts working in optomagnonics and related fields such as spin physics for cold atoms, microwave-magnon coupling, and magnonic systems in general, and generated a fruitful exchange of ideas across fields. The event was organized by Silvia Viola-Kusminskiy (Marquardt Division) and supported by the Max Planck Society. ■



QUTEGA WORKSHOP

QUTEGA
Quantentechnologie –
Grundlagen und Anwendungen

In November 2017 a workshop on Quantum technology – Fundamentals and Applications (in German: Quantentechnologie – Grundlagen und Anwendungen or QUTEGA) took place at MPL. Its aim was to establish closer connections between industry and the scientific community in the field of quantum science. QUTEGA is a national initiative set up by the Federal Ministry of Education and Research (BMBF) in response to the EU flagship program on quantum technologies. Gerd Leuchs is QUTEGA coordinator. ■

8TH ANNUAL MEETING OF IMPRS-PL

This year's annual meeting was held September 25-28, 2017 in Gößweinstein. Invited speakers and lecturers included Antoine Kouchner (Paris Diderot University), Christoph Lienau (University of Oldenburg), Allard Mosk (Utrecht University), Isabelle Staude (FSU Jena), Stephan Götzinger (MPL Erlangen) and Joachim von Zanthier (FAU Erlangen-Nuremberg). Golnoush Shafiee was elected student spokesperson for 2017/2018. She also received the award for the best talk, and the best poster award went to Cameron Okoth. ■

OSA STUDENT CHAPTER FIELD TRIP TO JENA

The OSA student chapter organized a field trip on October 24, 2017 to Jenoptik GmbH and the Fraunhofer Institute for Applied Optics and Precision Engineering (IOF) in Jena. The twenty-five-strong party included students from the Graduate School in Advanced Optical Technologies (SAOT) at Friedrich-Alexander University of Erlangen-Nuremberg. They were introduced to next-generation optical metrology systems and had an opportunity to sample the differences between industrial and academic work. The seven-hour trip concluded with a group photo of all participants at Jena's Ernst Abbe monument and a restorative get-together at the restaurant Ratszeise in Jena, with further discussions in a relaxed atmosphere. ■

NEW MAX PLANCK RESEARCH GROUP

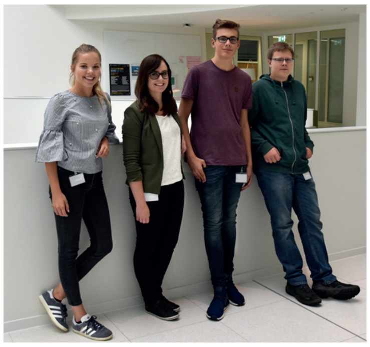
▸ In January 2018, Silvia Viola Kusminskiy started a new independent Max Planck Research Group. She plans to explore interactions between light and condensed matter systems on the micro/nanoscale, with a focus on optomagnonics, where light couples coherently to magnetic excitations in solid state systems. ■

FIRST MPL CASINO QUIZ NIGHT

▸ On December 7, 2017 the MPL Canteen (Casino in German) opened its doors for the first "Casino Quiz Night". Laboratory engineers, members of the administration, scientists and students got together to form six teams, competing in five different categories: science, records, curiosities, TV & movies and music. ■

NEW EMPLOYEES IN INFRASTRUCTURE AND GOODBYE

▸ In September 2017 four new employees started their apprenticeships. Nadja Kupfahl has joined Human Resources, Viktoria Kupfer Event Management, Samuel Rothfischer Technical Services and Simon Nussel the IT team. MPL also said goodbye to laboratory engineer Günther Kron, who played a major role in establishing the glass studio. We wish him many years of happy retirement.■



FOURTH MPL AUTUMN ACADEMY

▸ The fourth Autumn Academy took place October 4-6, 2017. As before, the aim was to introduce BSc and MSc students to the fast-moving field of optical sciences. The response was excellent. From more than 80 applications 24 students were selected and invited to Erlangen for a packed schedule of lectures, laboratory visits and poster sessions. We warmly thank Christine Silberhorn, Sheila Rowan and Anne L'Huillier for taking the time to visit MPL and deliver inspiring lectures, despite their very busy schedules. The academy's social events were financially supported by generous donations from Toptica GmbH and Trumpf GmbH. Thank you! ■

THE RANK PRIZE FOR OPTOELECTRONICS

▸ On February 12, 2018 Philip Russell (along with former colleagues Jonathan Knight and Tim Birks at the University of Bath) was awarded the 2018 Rank Prize for Optoelectronics at a ceremony in London. A YouTube video of the event, which includes a 15 minute introduction to photonic crystal fibres, may be watched at: https://youtu.be/Q9JCPQe19Bk. ■

NEWS IN BRIEF

▸ **Andreas Maser:** Student award in Optical Materials and Systems from SAOT (Graduate School in Advanced Optical Technologies, FAU)

▸ **Siegfried Weisenburger**: Young Researcher Award from the Deutsche Gesellschaft für angewandte Optik

▸ **Gerd Leuchs** named "Honorary Professor" by the Institute of Chemistry, St. Petersburg State University

▸ **Michael Frosz** elected Senior Member of The Optical Society

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