Yale Physics Newsletter July 26/August 2, 2019

For further information on any of the items included here or if you would like to contribute to the next newsletter, send email to Daphne Klemme.

During the summer months the newsletter will be produced every two weeks.

Hints & Tips!

Welcome to our hints and tips section! Please email daphne.klemme@yale.edu with any helpful tips that will help us work to our best ability.

Stockroom Card

Students or Postdocs who need request a stockroom card should have their PI send an email to Cindy Conforte (Cynthia.conforte@yale.edu) with the name of the person who will use the card and the COA the charges are to go on.

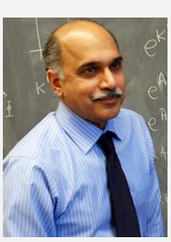
Climate and Diversity Committee News

A Note from the Climate and Diversity Committee (CDC).

The CDC convenes once a month. If interested in joining please contact Helen Caines (helen.caines@yale.edu, Chair of CDC). You may contact the whole committee at physics-cdc@mailman.yale.edu

News

Summer is upon us and I need items to keep our Facebook (http://www.facebook.com/YalePhysicsDept) page busy. Please send me a photo and brief statement of your summer research projects so that I can post them – it is exciting to see where everyone goes and what they are doing!



Ramamurti Shankar named the Gibbs Professor of Physics

Ramamurti Shankar, recently appointed as the J.W. Gibbs Professor of Physics, focuses his research on theoretical condensed matter physics and quantum field theory.

Click here for complete story in Yale News (July 16, 2019)

Save the Date

Yale Physics Department Summer Bootcamp for incoming Graduate Students runs August 5-16, 2019. Graduate student orientation is August 23, 2019. Classes start August 28, 2019.

Seminars

Monday, July 29

1:00pm in Leet Oliver Memorial Hall 206. Department of Mathematics Colloquium. Regina Rotman, University of Toronto, “Periodic geodesics, geodesic nets, and fillings”.

3:30pm in Sloane Physics Lab 52. Atomic Physics Seminar. Ziv Meir, University of Basel, Department of Chemical Physics, “Progress in the quantum control of single molecular ions”. Host: Nir Navon

4:00pm in Leet Oliver Memorial Hall 206. Department of Mathematics Colloquium. Demetre Kazaras, Stony Brook University, “Intrinsic Flat Limits with No Geodesics”.

Tuesday, July 30

10:00am in Leet Oliver Memorial Hall 206. Department of Mathematics Colloquium. Alexander Nabutovsky, University of Toronto, “Filling Metric Spaces”.

1:00pm in Leet Oliver Memorial Hall 206. Department of Mathematics Colloquium. Frank Morgan, Williams College, “Double and Multiple Bubbles in Gauss Space”.

4:00pm in Leet Oliver Memorial Hall 206. Department of Mathematics Colloquium. Brian Allen, University of Hartford, “Examples of Sequences of Manifolds and their Intrinsic Flat Limits”.

Wednesday, July 31

11:00am in Leet Oliver Memorial Hall 206. Department of Mathematics Colloquium. Nancy Hingston, The College of New Jersey, “Loop products, closed geodesics, and self intersections”.

2:00pm in Leet Oliver Memorial Hall 206. Department of Mathematics Colloquium. Christina Sormani, CUNY/Lehman, “Filling Riemannian Manifolds with Integral Current Spaces”.

4:00pm in Leet Oliver Memorial Hall 206. Department of Mathematics Colloquium. Ian Adelstein, Yale University, “Half Geodesics, Convergence, and Round Spheres”.

Thursday, August 1

10:00am in Leet Oliver Memorial Hall 206. Department of Mathematics Colloquium. Raquel Perales, UNAM in Oaxaca, “Gromov-Hausdorff and Intrinsic Flat Convergence and the Tetrahedral Property”.

1:00pm in Leet Oliver Memorial Hall 206. Department of Mathematics Colloquium. Craig Sutton, Dartmouth College, “Length Spectrum vs Laplace Spectrum”.

4:00pm in Leet Oliver Memorial Hall 206. Department of Mathematics Colloquium. Fedor Manin, Ohio State University, “A Counter Example to a Conjecture of Gromov on distortion of higher homotopy groups”.

Friday, August 1

10:00am in Leet Oliver Memorial Hall 206. Department of Mathematics Colloquium. Franco Vargas Pallete, UC Berkeley and IAS, “Continuity of the Renormalized Volume under Geometric Limits”.

1:00pm in Leet Oliver Memorial Hall 206. Department of Mathematics Colloquium. Fabian Parsch, University of Toronto, “Geodesic Nets With Few Boundary Points”.

Wednesday, August 4

2:00pm in Leet Oliver Memorial Hall 206. Department of Mathematics Colloquium. Daryl DeFord, MIT, “Mathematical Challenges in Neutral Redistricting”.

Friday, August 9

12:00pm in Bass Center 305, PEB Distinguished Speaker. Prof. Bruce Goode, Professor of Biology, Brandeis University, “Actin Machines and Cytoskeletal Intersections”. Host: Prof. Joe Howard. Lunch served at 11:45am.

For more seminars see: http://physics.yale.edu/calendar

Congratulations to Tonima Tasnim Ananna on the successful defense of her dissertation “Accretion History of AGN: X-ray Population Synthesis Model & Multiwavelength Photometric Redshifts”! Thesis Advisor: Meg Urry.

Eduardo Da Silva Neto, Ph.D.

Assistant Professor of Physics

Biographical Sketch

Eduardo H. da Silva Neto was born in Recife, Brazil in 1985. He obtained his B.A. in Physics and Mathematics (2008) from Amherst College, and his M.S. (2010) and Ph. D. (2013) in Physics from Princeton University, where he worked in the group of Ali Yazdani investigating broken symmetry states in unconventional superconductors with scanning tunneling spectroscopy. He was a postdoctoral researcher at the University of British Columbia’s Quantum Matter Institute, during which time he was a Max Planck-UBC postdoctoral fellow and a Global Scholar for the Canadian Institute for Advanced Research. During that period he worked in the groups of Andrea Damascelli (UBC) and Bernhard Keimer (Max Planck Institute - Stuttgart) studying high-temperature superconductors with resonant x-ray scattering and angle-resolved photoemission techniques. He is moving to Yale from UC Davis, where he has held an assistant professor position in Physics since 2016.

Research Program

I conduct experimental studies of quantum materials with advanced spectroscopic techniques targeting the discovery and investigation of emergent electronic quantum states of matter, such as pair-density-waves, nematic order, topological superconductivity and novel Majorana modes. Quantum materials (e.g. graphene, topological insulators, quantum spin liquids, and superconductors) are solid-state systems that feature poorly understood exotic electronic quantum phases of matter. Although all materials require quantum mechanics to explain their properties, quantum materials develop actually tangible emergent quantum effects. These exciting effects include the realization of exotic emergent topological particles (Weyl and Majorana states) and unconventional superconductivity intertwined with charge and spin order, which may provide new avenues for next-generation quantum computation and energy efficient materials. My research currently focuses on the study of topological materials and unconventional superconductors. To study the basic quantum mechanics of these materials my group uses a suite of techniques. First, at Yale, we will employ low-temperature (sub 1K) and high magnetic field (11T) scanning tunneling microscopy and spectroscopy (STM/S) to visualize the quantum wave functions of electrons at the atomic scale. Second, to complement the STM/S real-space studies at Yale, we will measure the electronic states in reciprocal space at synchrotron facilities around the globe, primarily using resonant soft x-ray scattering (RXS) and angle-resolved photoemission spectroscopy (ARPES) experiments. Current projects include the study of pair-density waves in heavy-fermion superconductors, the investigation of superconductivity and Fe-based high-temperature superconductors and their relationship to rotational symmetry breaking, and the search for new topological superconductors.

For more information please see: https://dasilvaneto.faculty.ucdavis.edu/

A recent high-level visit from members of the Office of the U.S. Secretary of Energy to the ALICE experiment at the LHC at CERN. Photo of the entourage in the ALICE cavern with a few accompanying ALICE members, including Yale Relativistic Heavy Ion Group graduate student Hannah Bossi (right in the middle of things!).

From left to right: Leticia Cunqueiro (ORNL); Sarah Charley (CERN-US protocol office); Friederike Bock (ORNL);Constantin Loizides (ORNL); Thomas (T.L.) Cubbage (Deputy Undersecretary of Science at the DOE); **Hannah Bossi** (Yale graduate student); Jim Siegrist (Director of High Energy Physics at the DOE); Kristen Ellis (Chief of Staff for the Undersecretary of Science at the DOE); Chris Fall (Director of the DOE Office of Science); Frederico Antinori (Padova/CERN); Mateusz Ploskon (LBL)

Environmental Health & Safety News

Beat the Heat with Water, Rest and Shade

If you are doing things outside or in an unconditioned building, please be aware of the signs and symptoms of

heat-related illness. Take precautions to reduce the risk of heat exhaustion.

If you supervise or oversee others who are involved in activities that take place outdoors or in an unconditioned building, make sure water is available. Consider adding rest periods or even postponing your plans for a cooler day.

Heat illnesses are preventable.

Heat-Related Illness

Remember three simple words: water, rest, shade. Drinking water often, taking breaks and limiting time in the heat can help prevent heat-related illness.

Whether working outdoors or spending time in unconditioned space, for your job or at home, competing on the athletic field or simply spending time outside on or off campus, you may be at risk of heat-related illness. The risk of heat-related illness becomes greater as the weather gets hotter and more humid.

Departments with employees who normally work outdoors or in indoor environments without air conditioning need to address heat stress when planning their work. Supervisors and others who oversee campus activities should review safety precautions and warning signs with their staff and students.

For further assistance, please contact Yale Environmental Health and Safety (EHS) at 203-785-3550. EHS can also suggest appropriate controls to reduce your risk of heat-related illness.

Drink water often

Rest in the shade

Report heat symptoms early

Know what to do in an emergency

Safety Tips

- Wear light-colored, loose-fitting, breathable clothing such as cotton. Avoid non-breathing synthetic clothing.
- Pace yourself during any activity and gradually build up to heavy work or more intense activity.
- Schedule outdoor work or activities carefully. Try limiting it to the coolest parts of day.
- Take more breaks in extreme heat and humidity. Take breaks in the shade or a cool area when possible.
- Drink water frequently. Drink enough water that you never become thirsty. If you are in the heat less than two hours and involved in moderate work activities, drink approximately one cup every 15-20 minutes.
- Avoid alcohol and drinks with large amounts of caffeine or sugar.
- Use a buddy system. When in the heat, monitor the condition of your family, friends and co-workers and have someone do the same for you.
- Monitor yourself for the signs and symptoms of heat-related illness listed below.

Signs & Symptoms

- Headache
- Dizziness
- Lightheadedness
- Fainting
- Weakness
- Mood change
- Mental confusion
- Upset stomach
- Vomiting

Anyone experiencing the above symptoms should be taken to the nearest hospital emergency department as soon as possible.

Contact Yale Health's Employee Health Department at 203-432-7978 if you have any questions regarding heat-related illnesses in Yale employees while at work.

Heat Index App

The U.S. Department of Labor (DOL) and Occupational Safety and Health Administration (OSHA) have developed a tool for your mobile phone. The "Heat Safety Tool" allows you to calculate the heat index in your location and, based on the heat index, displays a heat-related risk level.

It is available for iOS and Android. Click here for more information.

Source: OSHA

WorkLife Newsletter – July/August 2019

Did You Know?

New Haven's Outdoor Adventure Program

The staff of the City of New Haven's Outdoor Adventure Program and the New Haven Park Rangers encourage children, youth, and adults to experience unique new, challenging, safe, and fun learning experiences!

Check out the Outdoor Adventure Program

Support for Achieving Wellness Goals

Achieving wellness goals can be challenging, but **Yale's Counseling and Support Services** through Magellan can make it easier. Whether you're looking to be more active, stress less, or lose a few pounds, specialists can help you and your family live healthier lives. Get referrals for gyms and nutrition programs, preventative care, and more. Also, Magellan's website offers wellness tips, tools, and events, including the Your Healthy Lifestyle educational series. Call **800-327-9240** for additional information.

Learn more

Openings at Yale-Affiliated Child Care Centers

If you are still looking for child care for fall 2019, please consider these possible openings: **Phyllis Bodel Childcare Center at the Yale School of Medicine** for pre-school (3-5 years); **Calvin Hill Day Care Center and the Kitty Lustman-Findling Kindergarten** for kindergartners; and the **Edith B. Jackson Child Care Program** for infants and toddlers. Contact the center directly or email **worklife@yale.edu** for more information.

Slim Down for Summer with Weight Watchers!

There's still time to slim down for summer with **Weight Watchers**! A free "WW Insider's Box" is available to new members who join before July 26.

Learn more

Announcements

Please click here for updates on the Yale Science Building, including a new logistics plan. The project encompasses the construction of a new state of the art sciences laboratory at the approximate location of the demolished J.W. Gibbs building, a comprehensive renovation of the KBT Plaza, a lecture hall, and a common area at the south end of KBT Plaza.

Opportunities

Max Planck Institute for the Science of Light

The Max Planck Institute for the Science of Light research covers a wide range of topics, including nonlinear optics, quantum optics, nanophotonics, photonic crystal fibres, opotmechanics, quantum technologies, biophysics, and links between physics and medicine.

PhD Student Position (m/f/d) in Quantum Opto-Acoustics

We are an independent research group at the Max Planck Institute for the Science of Light. Our research interests span from nonlinear optics to quantum optics with a focus on light-sound interactions and waveguide optomechanics. The physics of optical waves interacting with acoustic or mechanic vibrations is fascinating because it links two very different domains in terms of frequency, velocity, dissipation and other properties. We explore these interactions experimentally at the classical and quantum level with suitably engineered microstructured fibres and nanowaveguides to manipulate, in this way, light states.

We invite applications from talented and highly motivated students for a **3-year PhD project** in the field of experimental quantum opto-acoustics. The project is situated at the interface of quantum optics, nonlinear optics and quantum information processing. It involves photonic design and fabrication, conception and setup of optical experiments and their analysis and interpretation within the rich theoretical background.

Requirements and skills:

- Excellent Master's degree or equivalent (German "Gymnasiallehramt", etc.) in physics, photonics or photonic engineering

- High motivation to conduct experimental research

- Ability to work independently and in a research team, collegiality and enthusiasm

- Desired: experience in optomechanics, quantum optics, nanomechanics

We offer a dynamic group atmosphere in an excellent research environment. We have local and international collaborations with experimental and theoretical groups. The Max Planck Institute for the Science of Light (www.mpl.mpg.de) is a world leading institution in fundamental research in light-matter interaction and quantum optics. The Max Planck Society is committed to increasing the number of individuals with disabilities in its workforce and therefore encourages applications from such qualified individuals. Furthermore, the Max Planck Society seeks to increase the number of women in those areas where they are underrepresented and therefore explicitly encourages women to apply.

For more information and application (including a letter of motivation, CV and the contact details of two possible referees) please contact:

Dr. Birgit Stiller

birgit.stiller@mpl.mpg.de, +49 9131/7133265

Max Planck Institute for the Science of Light, Staudtstr. 2, 91058 Erlangen

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Post-Doc Position (m/f/d) in Quantum Opto-Acoustics

We are an independent research group at the Max Planck Institute for the Science of Light. Our research interests span from nonlinear optics to quantum optics with a focus on light-sound interactions and waveguide optomechanics. The physics of optical waves interacting with acoustic or mechanic vibrations is fascinating because it links two very different domains in terms of frequency, velocity, dissipation and other properties. We explore these interactions experimentally at the classical and quantum level with suitably tailored microstructured fibres and nanowaveguides to manipulate, in this way, light states.

We invite applications from highly talented researchers for a **2-year Post-Doc Position (extendable)** in the field of experimental quantum opto-acoustics. The successful candidate will work experimentally at the interface of quantum optics, nonlinear optics and quantum information processing. The Post-Doc will be involved in different group projects and have the opportunity to guide MSc and PhD students and play a responsible role in the laboratory.

Requirements and skills:

- PhD degree in physics or photonics

- Relevant publication track record

- Significant experience in some of the following fields: quantum optomechanics, quantum communications, nanomechanics, nonlinear optics

- Ability to work independently and in a research team, collegiality and enthusiasm

- Very good communication skills in English (written and oral)

We offer a dynamical group atmosphere in an excellent research environment. We have local and international collaborations with experimental and theoretical research groups. The Max Planck Institute for the Science of Light (www.mpl.mpg.de) is a world leading institution in fundamental research in light-matter interaction and quantum optics. The Max Planck Society is committed to increasing the number of individuals with disabilities in its workforce and therefore encourages applications from such qualified individuals. Furthermore, the Max Planck Society seeks to increase the number of women in those areas where they are underrepresented and therefore explicitly encourages women to apply.

For more information and application (including a motivation letter, CV, publication list and the contact details of two possible referees) please contact:

Dr. Birgit Stiller birgit.stiller@mpl.mpg.de, +49 9131/7133265 Max Planck Institute for the Science of Light, Staudtstr. 2, 91058 Erlangen