

### Yale Physics Newsletter: September 13, 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 <u>Daphne Klemme</u>.

### Upcoming Events

#### Monday, September 16

**4:00pm** Department of Molecular Biophysics & Biochemistry Colloquium. Paul Turner, Ecology & Evolutionary Biology, Yale University, "Phage Therapy to Combat Infections by Antibiotic-Resistant Bacteria". Host: Dieter Söll. Bass 305 (Broadcast in SHM C103). Tea at 3:45pm.

#### Tuesday, September 17

**12:00pm** WIDG Seminar. Wenqiang Li, Yale University, "Thermal effects and stability of optically levitated micron-sized

## Department News



The Physics website is being updated! Look here for updates on the progress.

New Pages:

- Physics Internal Activity Calendar (Mobile)
- Fellowship Opportunities
- Employment is now Opportunities
- Sustainability is now under About

spheres in vacuum". WLC 245.

**12:00pm** Department of Molecular, Cellular and Developmental Biology Special Seminar. Jodi Nunnari, University of California, Davis, "Mitochondrial Behavior". Host: Tom Pollard. SCL 160 (Tea at 11:45am).

#### Wednesday, September 18

1:00pm Applied Physics Solid State & Optics Seminar. Frank Wise, Cornell University, "Spatiotemporal Dynamics of Optical Pulse Propagation in Multimode Fibers". Host: Hui Cao.

#### 2:00pm EHS

Orientation for Wright Lab Research Shop Users. WL 216.

2:30pm Mechanical Engineering & Materials Science Seminar. J. Houston Miller, George Washington University, "Towards the Molecular Composition of Soot". Host: Marshall Long. ML 107 (Refreshments served at 2:15pm).

# Thursday, September 19

**1:00pm** Nuclear Particle Astrophysics (NPA) Seminar. Timothy Wendler, Penn State, "Progress toward Phase III design of the Project 8 experiment". WL 216.

## Community

The <u>Climate and Diversity Committee</u> (CDC) convenes once a month.

This academic year Yale is commemorating the 50th anniversary of coeducation in Yale College and the 150th anniversary of women students at the university. Watch out for events around campus and in our department related to these important milestones in Yale's history .

If interested in joining please contact Helen Caines (<u>helen.caines@yale.edu</u>, Chair of CDC). You may contact the whole committee at <u>physics-</u> <u>cdc@mailman.yale.edu</u>

## Hints & Tips

In order to reduce our carbon footprint and to participate to the global effort described in the <u>Yale</u> <u>Sustainability Plan 2025</u>, we would like your input on what the department can do to further this goal.

Please make sure to send all sales tax exemption requests to <u>Cindy Conforte</u> to handle.

How to add the Physics Department Internal Activity Calendar to your Mobile Phone!

- 1. Download Google Calendar App
- In Google Chrome go to <u>http://physics.yale.edu/calendar/physics-internal-activity-calendar-mobile</u> and click on the +Google Calendar at the bottom right of the embedded calendar
- 3. This will add the Physics Department Internal Activity Calendar to your google calendar
- 4. Add to the google calendar app for viewing

Host: Karsten Heeger

**2:30pm** Yale Astronomy & Astrophysics Colloquium. Courtney Dressing, University of California, Berkeley, "TBA". WTS A-51.

4:00pm Department of Geology & Geophysics Colloquium. Sarah Penniston-Forland, University of Maryland, "Title TBA". KGL 123 Friday, September 20

**9:00am** School of Engineering and Applied Science Workshop on Continuum, Compliant, and Configurable Soft Robotics". Mann Engineering Center, DL 107.

MANN Eng	orkshop on Continuum, Compliant, and Configurable Se September 20, 2019 gineering Student Center, 107 Dunham Laboratory, 10 Hillbonse	oft Robotics Ave, New Haven, CI
Time	Event	
9.00	Opening remarks	
9:10	Jordan Berg, National Science Foundation	
9.25	Keynote 1: Michael Levin, Tafis University Why Robots don't get Cancer (and why that will have to change, if we're to have adaptive, sobust robotics)	
10:25	Coffee Break & Poster Session	
10:55	Matthew Speake, Illinois Institute of Technology Design Principles for Soft Robots Based on Boundary Constrained Granular Swarms	
11:20	Const Walsh, Harvard University Textile Robotics: Integrative Design, Modeling, Manufacture, and Control of Soft Human-Interactive Apparel	
11:45	Rebecca Kramer-Bottiglia, Yalo University Josh Bangard, University of Vernorat Madhu Venhadesan, Yala University Programmable Seins for Moldable aud Morphogenetic Soft Robots	
12:10	Lunch	
1:10	Keynote 2: Katia Bertoldi, Harvard University Kirigami-Inspired Metamaterials - from Morphable Structures to Soft Robots	
2.10	Bozakout Groups	
3:10	David Gracias, Johns Hopkins University Programming Thermobiochemomechanical (TBCM) Multiplex Robot Gels	
3:35	Aaron Dullar, Yale University Heffrey Triakle, Leidyal University Thomas Roherts, Brown University Muscle-like Cellular Architectures and Compliant, Distributed Sensing and Control for Soft Robot	
4:00	Faboratory and GRAB lab tours, live morphing robot demos	
5.00	End	
	Posters	
	Title	Primary Presenter(s)
A vacuum-jammed boundary constrained modular soft robot		Mohammad Amin Karimi
Sim2real for a protean machine		Sam Kriegman
Application of contact dynamics for the modeling of a boundary constrained swarm robot		Declan Mulroy & QiyuanZhou
	Sim2real of soft-bodied, shape-changing robots	Josh Powers
N	forphing robots using robotic skins that sculpt clay	Dylan Shah
tesponsive m.	lti-functional DNA polymerization motor gel for TBCM robots	Rachel Shi
Tendon-based jamming of a boundary constrained modular robot		Kele Teneka

Saturday, September 21

**9:00am** Girls' Science Investigations Session #1 (The World of Light)

Save the date!

These instructions are repeated on the page linked above.

## 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

MIT is pleased to announce the 2019 competition for the Lee Grodzins Postdoctoral Award. This award, which is a \$10,000 prize and an invited talk at MIT, was created to recognize the importance of original and unique work by postdoctoral fellows within the experimental nuclear and particle community. You can learn about the prize, including how to nominate, here:

http://web.mit.edu/Ins/news/Lee\_GRODZINS\_prize/index.html.

Nominations are due by September 15, 2019.

NASA CTSGC is excited to announce various funding opportunities available for our Fall 2019 Call for Applications! To view a summary of grants, scholarship awards, and design challenges that will be issued during our Fall 2019 award cycle please visit our Faculty Programs or Undergraduate & Graduate Programs pages. Applications can be completed electronically using the links on our Apply page. The due date for all applications is September 25, October 11, 2019 Yale Office of Career Strategy, GSAS & Postdocs for a site visit to United Technologies Research Center in East Hartford, CT. Transportation Provided. Apply to attend by September 30th through your Yale Career Link Account https://yale-csmsymplicity.com/students/

October 12, 2019 Yale Physics Olympics

October 21-23, 2019 2019 <u>Workshop on</u> Exploring New Science Frontiers at NSLS-II. Wang Center, Stony Brook University, Brookhaven National Laboratory. Please register by Monday, September 23, 2019 at

#### November 16, 2019

Girls' Science Investigations Session #2 (The World of Sound)

#### January 17, 2020

American Physical Society Conference for Undergraduate Women in Physics at Yale

**February 8, 2020** Girls' Science Investigations Session #3 (The Electronic World)

**April 4, 2020** Girls' Science Investigations Session #4 (The Geophysical World)



The <u>Koo Laboratory</u> at the Simons Center for Quantitative Biology at Cold Spring Harbor Laboratory has two postdoc positions available (see descriptions below). Interested candidates should send a cover letter with a brief statement of research interests, CV, and contact information for three references to <u>koo@cshl.edu</u>.

The Koo Laboratory studies the functional impact of genomic mutations through a computational lens using data-driven artificial intelligence (AI) solutions. We are broadly interested in applications for studying gene regulation and protein (dys)function. Our approach develops methods to interpret high-performing AI models to distill knowledge that they learn from big, noisy biological sequence data. Our goal is to elucidate biological mechanisms that underlie sequence-function relationships, with a broader aim of advancing precision medicine for complex diseases, including cancer. For more information, check out <u>https://koo-lab.github.io/</u>.

### Machine learning postdoc

**Job description**: The successful candidate will develop deep learning solutions to address cutting edge problems in regulatory genomics. Candidates with prior knowledge of computational biology or a machine learning background with a strong interest in transitioning into biological data space are encouraged to apply.

**Qualifications**: A PhD in Computer Science, Physics, (Applied) Math, Statistics, Bioinformatics, Engineering or other quantitative field is required. Machine learning experience is required, as is enthusiasm for biology or

biomedicine. In-depth knowledge of one or more of the following is required: transformer networks, variational autoencoders, adversarial attacks/training, generative adversarial networks, and interpretability techniques for black-box models. Ideal candidates will be driven, have strong communication skills and a desire to work in an interdisciplinary environment. Prior experience with biological sequence data is a plus, but not necessary.

### Computational biology postdoc

**Job description**: The successful candidate will apply deep learning methods to address challenging biological problems that fall within the lab's broad interests in gene expression, alternative splicing, or RNA-protein interactions. Candidates with a strong biology background and experience solving biological problems with computational methods are encouraged to apply. Prior experience with machine learning is a plus, but not necessary.

**Qualifications**: A PhD in Biology, Bioinformatics, Biophysics or other related field is required. The ideal candidate will be driven, have strong communication skills and a desire to work in an interdisciplinary environment. Experience with python programming is required.

Cold Spring Harbor Laboratory is a world-renowned research and educational institution recognized internationally for its excellence in fundamental areas, such as cancer, neuroscience, plant biology, genomics, and quantitative biology. Cold Spring Harbor Laboratory offers a highly collaborative social and scientific environment as well as a competitive salary and benefits. The laboratory is located on the north shore of Long Island and is readily accessible from New York City via the Long Island Rail Road.

CSHL is an EO/AA Employer. All qualified applicants will receive consideration for employment and will not be discriminated against on the basis of race, color, religion, sex, sexual orientation, gender identity, national origin, age, disability or protected veteran status.

### Leon N Cooper Postdoctoral Fellowship at Brown University

The Department of Physics at Brown University is inviting applications for the Leon N Cooper Postdoctoral Fellowship. This prestigious fellowship will give an outstanding experimental physicist an opportunity to work with the biological

physicist an opportunity to work with the biological

physics/soft matter group at Brown (<u>https://www.brown.edu/academics/physics/biologicalphysics</u>). The current research interests of the faculty in that group include, but are not limited to, biomolecular assembly, collective phenomena, active matter, nanofluidics, single-molecule analysis, and multifunctional materials. A competitive annual stipend will be offered along with a research and travel fund. Application materials including a CV, statement of research plans, and three letters of recommendation should be submitted electronically to <u>apply.interfolio.com/67893</u>.

Inquiries about this position should be directed to LNCsearch@brown.edu or to Prof. Jay Tang, Chair of the Leon N Cooper Fellowship Committee, Department of Physics, Box 1843, Brown University, Providence, Rhode Island 02912. Applications received by December 1, 2019 will receive full consideration.

Brown University is committed to fostering a diverse and inclusive academic global community; as an EEO/AA employer, Brown considers applicants for employment without regard to, and does not discriminate on the basis of, gender, race, protected veteran status, disability, or any other legally protected status.



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