

Yale Department of Physics

Yale Physics Newsletter

February 9, 2018

News

Welcome to our new Faculty Member! Ben Machta is a theoretical physicist interested in the way that order and function emerge from microscopically complicated and noisy biological systems. Much of Ben's work focuses on understanding the structure and unusual thermodynamics of biological membranes, which are tuned close to a de-mixing critical point. He has sought to understand what this critical point means for the function of ion channels and other proteins residing within the membrane. Ben has used tools from information geometry and statistics to understand why we can so often use simple models to accurately describe microscopically complicated systems. He has used similar tools to place bounds on the efficiency of small thermodynamic machines, like molecular motors that must operate at scales where fluctuations are enormous.

Ben did his undergraduate studies at Brown University, and received a PhD in physics with James Sethna at Cornell University. He is currently a Lewis-Sigler fellow at Princeton University where he carries out independent research and teaches in an advanced interdisciplinary science program for freshman. Ben began an appointment as an assistant professor in the Department of Physics and the Systems Biology Institute in January 2018.

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Welcome to Gianantonio Pezzullo a Postdoctoral Associate working with Sarah Demers. In his own words . . . "My passed research activity (3 years PhD + 2 years PostDoc @ INFN of Pisa) was dedicated to the design of the Mu2e experiment at Fermilab that will search for the charged lepton flavor violating process: $\mu + N \rightarrow e + N$. I mostly have focused my studies on the crystal calorimeter project, but I have been also strongly involved in the development of the track reconstruction code. The experience I gained on calorimetry and tracking sides allowed me to perform several relevant studies: background suppression, particle-identification algorithms, sensitivity estimates, etc. Now that I joined Sarah Demer's group in Yale, I will focus my research on developing the Mu2e trigger strategy and working with young students for implementing trigger algorithms."

For more news please see <http://physics.yale.edu/news>

Save the Date

Spring Recess is coming! March 9-25, 2018. Also, please be on the lookout for prospective graduate students visiting during the Graduate Admissions Open House April 6-7, 2018.

Seminars

Monday, February 12 Cell Biology Special Seminar. Bart W. Hoogenboom, University College London, "Imaging and Probing Biomolecular Assemblies at Nanometre Resolution", SHM C-428 at 11:00am. Hosts: Patrick Lusk and Chenxiang Lin.

Monday, February 12 Physics Club. J.C. Seamus Davis, Cornell, "Visualizing Quantum Matter", SPL 57 at 3:30pm. Host: Charles Ahn. Tea after the talk in SPL 3rd Floor Lounge.

Tuesday, February 13 Yale Center for Astronomy and Astrophysics Seminar. Leslie Rogers, Institute, "The Diversity and Demographics of Distant Rocky Worlds", WTS A-51 at 2:30pm.

Tuesday, February 13 Particle Theory Seminar. Prateek Agrawal, Harvard, "Title TBA", SPL 52 at 4:00pm.

Tuesday, February 13 Department of Chemistry Lecture in Biophysics Chemistry. Prof. Judy Kim, University of California, San Diego, "The Radical Life of Tryptophan", SCL 160 at 4:00pm.

Wednesday, February 14 Applied Physics Seminar. Benjamin Chapman, University of Colorado, "Widely tunable on-chip microwave circulator for superconducting quantum circuits", YQI Seminar Room at 9:30am.

Wednesday, February 14 Solid State & Optics Seminar. Prof. Azriel Z. Genack, City University of New York, "Diffusion in Translucent Media", Becton Seminar Room at 1:00pm. Host: Prof. Hui Cao.

Wednesday, February 14 Department of Mathematics Colloquium. John Francis, Northwestern University, "Factorization homology", LOM 215 at 4:15pm.

Thursday, February 15 Dissertation Defense. Aleksander Rebane, Yale University, "Exploring free energy landscapes of SNARE assembly using optical tweezers", SHM C428 at 10:00am. Thesis Advisors: James E. Rothman & Yongli Zhang.

Thursday, February 15 Atomic Physics Seminar. Freek Ruesink, AMOLF, "Manipulating light with ring resonators coupled to antennas and mechanical motion", SPL 51 at 1:00pm. Host: Jack Harris.

Thursday, February 15 Department of Astronomy Colloquium. Edo Berger, Harvard, "Rattle and Shine: Joint Detection of Gravitational Waves and Light from the Binary Neutron Star Merger GW170817", WTS A-51 at 2:30pm.

Thursday, February 15 Department of Chemistry Lecture in Organic Chemistry and Chemical Biology. Prof. Bo Li, University of North Carolina, Chapel Hill, "Mighty Chemistry of Bacterial Small Molecules", SCL 160 at 4:00pm.

Friday, February 16 Center for Teaching and Learning Seminar. Dr. Robert Bellin, College of the Holy Cross, “Purification and characterization of Taq polymerase: The development of a multi-week, skill-development based laboratory project for undergraduate students”, CTL 120A-120B at 11:00am.

Friday, February 16 Sacker Discussion Group. Margarida Agrochao, Yale University, “Which neurons regulate walking speed in fruit flies?” and Zachary Levine, Yale School of Medicine, “Intrinsically disordered protein folding and the thermodynamics of amyloid diseases”, SPL 57 at 12:00pm. Lunch served at 11:45am.

Saturday, February 17 Girls’ Science Investigations. Session #3 The Material World. Sloane Physics Laboratory 9:00am-2:00pm by registration only.

Saturday, February 17 2018 Lunarfest. Celebrate the year of the Dog! 10:00am Parade on Whitney Avenue. [Click here](#) for schedule of events.

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

Announcements

Reminder – Postdoctoral appointments, Visiting Students in Research (VSR) appointments, and Minors in the Laboratory are handled by Daphne Klemme (daphne.klemme@yale.edu); Faculty Appointments (including Research Scientists, Faculty, Visiting Faculty, etc.) are handled by Maria Foley (m.foley@yale.edu); Visiting Assistant in Research (VAR) appointments, Visiting Students or Exchange Students (DSR) appointments are handled by Sandy Tranquilli (Sandra.tranquilli@yale.edu); Sponsored Identities (netIDs for non-employees) are handled by Karen DeFelice (karen.defelice@yale.edu); and Student jobs are handled by Cindy Conforte (Cynthia.conforte@yale.edu).

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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](#).

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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.