Non-Academic Careers Panels

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Transition Panel

Michael I. Buchoff

Staff Scientist, **Lawrence Livermore National Laboratory**

I currently work in a range of physics topics within nuclear and global security. I also spend ample time working on simulations and experimental design for high-energy density plasma physics facilities such as the National Ignition Facility at LLNL and the Z machine at Sandia National Laboratory. I received my BS in physics from Carnegie-Mellon University in 2005 and my Ph.D in theoretical nuclear physics from University of Maryland, College Park in 2010, after which I was a postdoc at Lawrence Livermore National Laboratory 2010-2013, followed by a postdoc at The Institute for Nuclear Theory at the University of Washington, Seattle 2013-2015 before becoming a permanent staff scientist at LLNL in 2015. My academic research explored a range of topics in strongly coupled field theory, lattice field theory, and effective field theory, including work in hadronic scattering, beyond the standard model physics, large N field theory, dark matter, and neutron-antineutron oscillations.

Currently, my division at LLNL is hiring. See https://wci.llnl.gov/careers for more details.

Yuzhi Liu

Software Engineer, **Google**

Yuzhi Liu is currently a software engineer at Google working on developing search ranking algorithms. Prior to that, he worked at an ad-tech start-up, Demandbase, as a Data Scientist on building recommendation systems. Yuzhi graduated from University of Iowa and worked at Fermilab, Colorado, and Indiana on various lattice projects. The first model he worked on was a pure classical spin model, called Dyson's hierarchical model, and the last one he completed was a lattice form factor calculation on Bs-> K decay with Fermilab Lattice and MILC Collaborations. He also worked on Beyond the Standard Model and Tensor Renormalization Group relevant projects.

Benjamin Owen

Senior Post-processing Scientist, **Australian Bureau of Meteorology**

I joined the Bureau of Meteorology in 2016 as a graduate meteorologist and have been in my current position since 2020. As a post-processing scientist, I am responsible for developing and maintaining systems for calibration and enhancement of numerical weather prediction model outputs using physical and statistical post-processing techniques. Prior to this role, I worked as an operational meteorologist, responsible for the preparation and provision of weather forecasts, briefings and warnings to a range of customers including aviators, marine users, emergency services, media and the general public.

Prior to my career in the Bureau, I undertook my graduate and post-graduate studies, with my area of interest in lattice QCD being hadron structure. My lattice QCD journey started in 2010 during the honours (final) year of my BSc at the University of Adelaide, with a project evaluating electromagnetic form factors for the radiative decay of the rho meson; I then stayed on at the University of Adelaide to complete my PhD under the supervision of Derek Leinweber and Waseem Kamleh. My doctoral thesis "A Variational Approach to Hadron structure in Lattice QCD" explored the application of variational techniques to 3-point correlation functions to provide improved estimates of ground state properties and a means for extracting hadronic structure properties of excited states.

Patrick Steinbrecher

Application Engineer, **Intel**

Patrick worked as part of HotQCD collaboration for 5 years before joining Intel's team for upcoming Aurora supercomputer at Argonne National Laboratory.
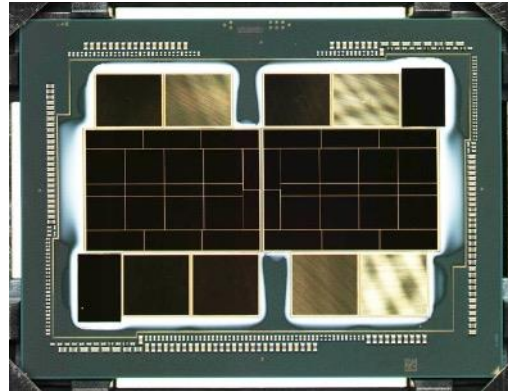
Intel Career Opportunities (links)**:**

- HPC position #1
- HPC position #2
- HPC position #3
- HPC position #4
- HPC position #5
- HPC position #6

Or search at jobs.intel.com
Or contact me on Lattice 2021 Slack

Intel Ponte Vecchio GPU

https://youtu.be/JzbN1IOAcwY

https://youtu.be/mRQFJFmYMak

Jiqun Tu

Senior Compute Developer Technology Engineer, **NVIDIA**

Before joining NVIDIA I received a physics PhD on lattice QCD from Columbia University, where I worked on algorithms to accelerate QCD simulations with domain wall fermions. Currently I work on using the tensor cores, available on the latest NVIDIA GPUs, to accelerate a broad range of HPC applications.

Fleur Versteegen

Functional Design Engineer Metrology, **ASML (the Netherlands)**

I did a BSc in Physics and Astronomy at the Radboud University in Nijmegen (the Netherlands), followed by a MSc in Particle and Astrophysics at the same university.

In 2016 I started my PhD at the university of Heidelberg in Germany and during the three years that followed I worked on multiple approaches to Quantum Gravity. Although I did not directly work on Lattice QCD, one of the Quantum Gravity approaches I worked on was a lattice approach named Euclidean Dynamical Triangulations. I finished my PhD in late 2019 and started my job at ASML in early 2020.
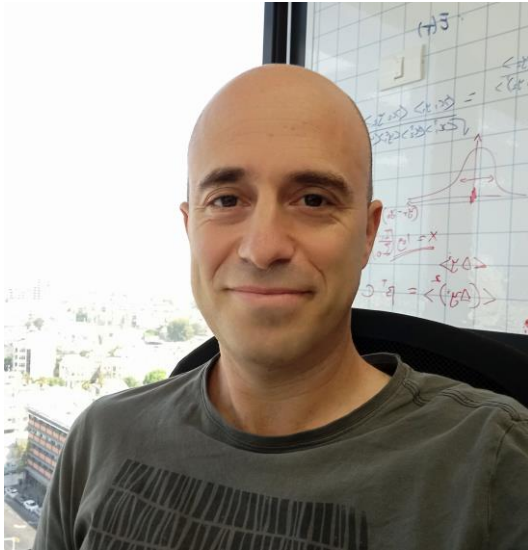
Employment Panel

Barak Bringoltz

Algorithm Group Manager, **Sight Diagnostics**

Barak Bringoltz is a theoretical physicist and a computational scientist. He holds a PhD in physics from Tel-Aviv University, and served as a postdoctoral research fellow at the Peierls physics institute at the University of Oxford, and at the particle physics group at the University of Washington. During his time in academia, he researched lattice QCD at extreme conditions of high temperature and density, and used large-N methods on the lattice to study the connection between QCD and it's effective string and string theory.

In the past decade, he has been leading R&D algorithm and modeling groups in the industry. Especially, in the semiconductor chip manufacturing industry, he served as a Principal Scientist at KLA-tencor and as Director of Technology at Nova measuring, and is now the Algorithm Group Manager of Sight Diagnostics, a start-up in the healthcare domain whose mission is to use computer vision and AI to change the way blood testing is done.

Barak is primarily focused on the modeling of images and other optical signals as a function of the underlying parameters of the imaged object and the imaging system, and on using physical and machine/deep learning modeling to perform precise and accurate measurements of these parameters in real time.

Guido Cossu

Founder, Technology & Creative Director, **Braid Technologies**

I worked in Lattice QCD for about 15 years. I did my PhD at Scuola Normale Superiore in Pisa, Italy and moved for a postdoc in Japan where I stayed several years at KEK in Tsukuba, focusing on finite temperature studies in relation to the chiral phase transition. I then moved for a couple of years to the Edinburgh group in 2016 and was one of the main contributors of the GRID lattice code, now powering the simulations of several Lattice groups.

In 2018 I moved back to Japan to join a self-driving startup, Ascent Robotics, as a research scientist. Quickly made responsible for the whole R&D team of scientists.

I learned a lot but eventually left after a couple of years and founded in 2020 **Braid Technologies** in Tokyo, with Ivo Timoteo (ex Ascent Robotics CTO). At Braid we are building the technology to propel the next revolution in design (see www.braid.tech, still in stealth mode though). We are currently looking for extremely bright research scientists, talented and with the right spirit of adventure to join our top level team.

Anyi Li

Chief, Associate Attending, **Department of Medical Physics, Memorial Sloan Kettering Cancer Center**

I worked on Lattice QCD at finite density and finite temperature as a Ph.D. student and postdoctoral researcher. I looked for the approach to solve the QCD sign problem and locate the critical point at the QCD phase diagram.

I joined Yahoo big data team as a senior software engineer after completing my second postdoc. I helped build a real-time big data pipeline for analyzing advertisement impressions from Yahoo's digital assets. Later I worked at a healthcare startup then it was acquired by IBM. I was a senior software engineer and architect for IBM Watson Health. I led the team to build the data foundation for Watson Health and analyze longitudinal patient records using natural language processing and other machine learning methods.

Recently, I joined the Department of Medical Physics as a faculty member at Memorial Sloan Kettering Cancer Center. I am the Chief of the computer service division. My team focuses on automatic treatment planning, imaging segmentation by artificial intelligence, outcome research, and workflow automation using big data. The ultimate goal is to improve the safety and efficiency of radiation therapy in cancer patient care.

Shu Li

Vice President, **Goldman Sachs**

Shu Li is a leader of the Municipal Systematic Market Making team in Goldman Sachs, and he works on the development and management of the algo trading of municipal bonds. Previously, he worked on the algo trading of mortgage-backed securities. From 2008 to 2018, he worked as a strat/quant, and covered various desks including Munis, Credit, Emerging Markets, and Mortgages.

Prior to joining Goldman Sachs in 2008, Shu studied at Columbia University and was a member of the RBC Collaboration. He worked on the Kaon Weak Matrix Elements in Domain-Wall Fermion Lattice. Shu earned a PhD in Physics from Columbia University in 2008.

Dru B. Renner

Scientist, **X-Theoretical Design Division of Los Alamos National Laboratory**

Dru Renner received his Ph.D. from MIT working on lattice QCD. He continued at the University of Arizona, DESY and JLab. During that time, he worked on nucleon matrix elements, pion scattering and hadronic corrections to g-2. For the later work, he shared a Ken Wilson award with colleagues. In 2013, Dru joined Los Alamos National Laboratory. He graduated from Los Alamos's Theoretical Institute of Thermonuclear and Nuclear Studies, a three-year post-graduate program. During his time at Los Alamos, he has worked on several weapon systems; he has been the lead designer for many explosively-driven proton-radiography experiments and the lead physicist for a full-scale hydrodynamic experiment. Additionally, he has performed extensive simulations in support of a recent weapon life extension program and is currently a point of contact for a Los Alamos weapon system. Relevant to today's panel discussion, he is also the chair of his division's hiring committee.

Gennady Voronov

Applied Scientist, **Amazon**

I obtained my PhD, working primarily with George Flemming, in 2014 from Yale University. I worked in the area of strongly coupled models of BSM physics. Following grad school, I've worked as a data scientist using my technical skills to solve a variety of industry problems. For over the past 7 years I've been doing a mix of standard data science salaried jobs and independent consulting engagements. Most recently and for the past just over 4 years, I have been an applied scientist in the CETech retail organization within Amazon.

Mathias Wagner

Senior Compute Developer Technology Engineer, **NVIDIA**

Mathias Wagner is a member of the European developer technology team at NVIDIA since 2015, where he works on high performance computing and scientific applications. One focus area is the QUDA library, used for running Lattice QCD on GPUs.

Before joining NVIDIA, he worked as a postdoc in Lattice QCD at Bielefeld University and Indiana University, focussing on using GPUs for finite temperature QCD.