

Exponent®
Engineering & Scientific Consulting

Alex Stern, Ph.D.

Managing Scientist | Computer, Data & Security Sciences
Irvine
+1-949-242-6038 | astern@exponent.com

Professional Profile

Dr. Alex Stern implements technology driven solutions to rapidly changing problems for a variety of clients in both the commercial and government sectors. Leveraging his background in computational simulations and high-precision measurements, he can add value to any part of the data science lifecycle, including data collection, data analysis, quality assurance, machine learning modeling, and the communication of results.

While performing all these tasks, Alex seeks to always put the customer's needs first and to establish a clear line of communication on the value generated.

Prior to joining Exponent, Alex worked as a postdoctoral researcher at the Max Planck Institute for the Chemical Physics of Solids in Dresden, Germany, where he continued pioneering new measurement techniques to probe unconventional quantum crystal materials. His projects included developing uniaxial strain techniques, which involved suspending a narrow crystal bar between two clamps to change the long axis of the bar in situ by about 1% and drastically change the material's properties. Alex was only the second person to publish a scientific paper using this measurement technique, which has now become a popular tool for cutting-edge physics research.

The experiments were performed with high-precision electronics and custom-made scientific equipment to provide highly accurate quantitative results. To complete such projects, Alex designed custom experimental equipment, programmed experiment specific simulations, developed high-precision data collection environments, analyzed data, wrote peer-reviewed papers, and presented results at international conferences.

Dr. Stern received a Ph.D. in Physics from the University of California, Irvine in the field of condensed matter physics, where he performed electrical, optical, and strain experiments on exotic crystal materials, through which he acquired extensive experience in experimental design, simulations, and high-precision measurements.

Before attending graduate school, Alex worked at the Department of Defense co-leading an engineering group that programmed data science techniques for the identification of electronic functionality with a high degree of confidence, which never produced a false-positive result. Additionally, Alex has experience in electronic design, electronic fabrication, and image processing.

Furthermore, Alex has developed a diverse skillset including: a variety of programming languages, data science, data engineering, distributed systems, image processing, image recognition, conference presentation, scientific writing, electronic design, machine learning, cryogenics, magneto-optical measurements, and high precision electrical measurements.

Currently, Alex works on a multidisciplinary team to quickly respond to customer's challenges and

develop machine learning algorithms to generate value. By utilizing a variety and technology tools, the team pursues creative solutions to existing and future problems. The group can assist any client through any part of the data lifecycle.

Academic Credentials & Professional Honors

Ph.D., Physics, University of California, Irvine, 2018

M.S., Physics, University of California, Irvine, 2016

B.S., Applied Physics, University of California, Davis, 2012

Licenses and Certifications

IBM Data Science Professional Certificate

Data Science Foundations Professional Certificate

IBM Python Data Science Professional Certificate

Academic Appointments

Postdoctoral Researcher, Physics of Quantum Materials, Max Planck Institute for the Chemical Physics of Solids, Dresden, Germany, 2018-2021

Graduate Student Researcher, Department of Physics and Astronomy, University of California, Irvine, 2014-2018

Research Engineer, Western Digital, San Jose, CA, 2017

Teaching Assistant, Department of Physics and Astronomy, University of California, Irvine, 2013-2014

Data Scientist, Defense MicroElectronic Activity, Department of Defense, McClellan, CA 2011-2013

Undergraduate Grader, Department of Physics and Astronomy, University of California, Davis, 2009

Undergraduate Researcher, Department of Physics and Astronomy, University of California, Davis, 2009

Languages

German

English

Publications

Stern A, Dzero M, Galitski VM, Fisk Z, Xia J. Kondo insulator SmB6 under strain: surface dominated conduction near room temperature. Nature materials 16 (7), 708-711.

Stern A, Efimkin DK, Galitski V, Fisk Z, Xia J. Radio Frequency Tunable Oscillator Device Based on a SmB6 Microcrystal. Physical review letters 116 (16), 166603.

Casas B, Stern A, Efimkin DK, Fisk Z, Xia J. Direct observation of surface-state thermal oscillations in SmB6 oscillators. Physical Review B 97 (3), 035121.

For a complete listing of publications, see Alexander Lawrence Stern - Google Scholar

Presentations

Stern, A. Surface States of SmB6. Correlated Magnetism: from Frustration to Topology (SFB 1143) Retreat Meeting. Grimma, Germany. 2019

Stern, A. Strain-induced resistance anisotropy near the FQHE v= 5/2 in two-dimensional GaAs single quantum wells. APS March Meeting. Boston, MA. 2019

Stern, A. Strain-induced resistance anisotropy of GaAs two-dimensional electrons. APS March Meeting. Los Angeles, CA. 2018

Stern, A. Kondo insulator SmB6 under strain: surface dominated conduction near room temperature. APS March Meeting. New Orleans, LA. 2017

Stern, A. 30 MHz Self Oscillator using Topological Kondo Insulator SmB6. APS March Meeting. San Antonio, TX. 2015