

Alex Atanasov

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EDUCATION

Harvard University PhD. Theoretical Physics	August 2018 - present
Yale University M.S. and B.S. Mathematics, B.S. Physics— <i>magna cum laude</i> , <i>Phi Beta Kappa</i> <ul style="list-style-type: none">• Undergrad Coursework in: Modern Combinatorics, Algorithm Design and Analysis, Systems Programming “CS 323”• Graduate Coursework in: Algebraic Geometry, the Langlands Program, Quantum and Conformal Field Theory, Statistical Physics	Graduated: May 2018 GPA: 3.92
Thomas Jefferson High School for Science and Technology <ul style="list-style-type: none">• Post-AP Coursework in: Parallel Computing I & II, Numerical Analysis, Complex Analysis, Linear Algebra	Graduated: June 2014

EXPERIENCE

Software Engineering Intern: Machine Learning and Computer Vision <i>Google – Supervised by Dr. Nhat Vu</i> <ul style="list-style-type: none">• Ported TensorFlow models to run on embedded devices for real-time face detection and recognition on video streams.• Achieved a 6x speedup in run-through time for inference vs. the start of the summer, without noticeable accuracy loss.	May – August 2017 Mountain View, CA
Visiting Researcher: Sparse Grid Discretization for Relativistic Astrophysics <i>Perimeter Institute for Theoretical Physics – Supervised by Dr. Erik Schnetter</i> <ul style="list-style-type: none">• One of seven students selected internationally to participate in Perimeter’s undergraduate program.• Wrote a software package for solving Einstein’s equations, speeding up 2D models from $O(N^2)$ to $O(N \log N)$ and 3D models from $O(N^3)$ to $O(N \log^2 N)$ on large datasets, where N is the resolution. Published results.• Organized 10 weekly <i>undergraduate lecture seminars</i>. Presented two lectures on complex & algebraic geometry.• Selected as lecturer & guest mentor for the high schoolers in the ISSYP program (lecture video here).	May 2016 – January 2017 Waterloo, ON
Undergraduate Researcher: Machine Learning for Emulation of Neuronal Networks <i>Yale School of Medicine, Dept. of Psychiatry N3 Division – Supervised by Dr. John Murray</i> <ul style="list-style-type: none">• Built TensorFlow-based package for modeling neural behavior in various cognition tasks, based off medical data.• Used CUDA, the Yale computing cluster, and tools in high-dimensional data science to generate results for publication.	December 2015 - Present New Haven, CT
Multi-scale Modelling of Carbon Nanomaterials <i>MITRE Corporation Student Program – Supervised by Dr. James Ellenbogen</i> <ul style="list-style-type: none">• Developed and published electrostatics-based model of trends in the quantum capacitance of carbon nanomaterials.	June 2014 – January 2016 McLean, VA
SEAP Program Student Researcher: Plasma Cloud Generation using Cavity Resonators <i>Naval Research Laboratory – Supervised by Dr. Paul Bernhardt</i>	May – August 2013 Washington D.C.

PUBLICATIONS

<i>Sparse Grid Discretizations based on a Discontinuous Galerkin Method</i> <ul style="list-style-type: none">• Submitted to <i>Journal of Classical and Quantum Gravity</i>, in collaboration with Dr. Erik Schnetter. [arXiv link]	October, 2017
<i>Analytic Formulas for Detachment Energies in Carbon Fullerenes</i> <ul style="list-style-type: none">• Paper published in <i>Physical Review A</i>, in collaboration with Dr. James Ellenbogen. [PRA link]	March, 2017
<i>Representations of a Physical Universe</i> <ul style="list-style-type: none">• An open textbook on the ideas of modern mathematical physics, intend to publish through Yale in the fall. [link]	May 2017, Ongoing
<i>GalerkinSparseGrids.jl</i> <ul style="list-style-type: none">• Julia package implementing efficient method to solve differential equations in higher dimensions. [link]	August 2016
<i>Complex Analysis: In Dialogue</i> <ul style="list-style-type: none">• Independently published a 500-page pedagogical work on complex analysis in high school. Made for-sale on Amazon.	October 2013

HONORS AND AWARDS

• Howard L. Schultz Prize in Physics – To an outstanding senior in physics at Yale	2018
• William L. Putnam Mathematics Competition – Top 300	2016
• Morse College Richter Fellow & Yale Dean’s Research Fellow – For summer research at Perimeter	2016
• United States Physics Olympiad Semifinalist	2013

SKILLS

Programming:	Python, C, Julia, Mathematica, Java, Matlab/Octave, HTML/CSS, Excel, R	(by experience, most to least)
Parallel tools:	OpenMP, MPI, CUDA, Tensorflow, Julia toolkit. Strong background in scientific computing and HPC.	
Languages:	English, Bulgarian (native speaker, can read, & write), Latin (read & write, AP and graduate coursework)	
Other:	Strong background in tutoring, public speaking, and academic lecturing. Last but not least, user of $L^A T_E X$.	