

## David Buch

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<b>Contact Information</b>	Department of Statistical Science Duke University Durham, NC 27705	<i>Email:</i> david.buch@duke.edu <i>Office:</i> 211A Old Chemistry <i>Website:</i> davidbuch.github.io
<b>Education</b>	<b>Duke University</b> , Durham, NC Ph.D. Statistical Science	<b>In Progress</b>
	<b>West Virginia University</b> , Morgantown, WV M.S., Applied Mathematics B.S., Mathematics, Physics <i>Summa cum Laude</i> & Honors College Certification	<b>2019</b> <b>2018</b>
<b>Honors and Awards</b>	<ul style="list-style-type: none"><li>• National Merit Scholar 2014</li><li>• National Advanced Placement Scholar 2014</li><li>• United States Presidential Scholar 2014</li><li>• West Virginia University Whitehill Memorial Award 2015</li><li>• West Virginia University Eberly Scholar 2018</li><li>• West Virginia University Outstanding Senior 2018</li></ul>	
<b>Peer-Reviewed Publications</b>	<i>Improving performance of SEOBNRv3 by <math>\sim 300\times</math></i> T.D. Knowles, C. Devine, <b>D.A. Buch</b> , S.A. Bilgili, T.R. Adams, Z.B. Etienne, S.T. McWilliams. <i>Classical and Quantum Gravity</i> . 35: 15	<b>2018</b>
	<i>Collective repacking reveals that the structures of protein cores are uniquely specified by steric repulsive interactions</i> J.C. Gaines, A. Virrueta, <b>D.A. Buch</b> , S.J. Fleishman, C.S. O'Hern, and L. Regan. <i>Protein Eng. Des. Sel.</i> 30: 387	<b>2017</b>
<b>Published Software</b>	<i>gretel: Generalized Path Analysis for Social Networks</i> <b>D.A. Buch</b> . Comprehensive R Archive Network.	<b>2019</b>
<b>Computing</b>	C, C++, R, Python, Git, L <sup>A</sup> T <sub>E</sub> X, Linux/Unix Command Line Scripts	
<b>Presentations</b>	<i>Tie Strength, Optimal Connections, and Distance in Social Networks</i> West Virginia University M.S. Thesis Defense	<b>2019</b>
	<i>Defining the Characteristics of a West Virginia First Generation and Rural Stem Student</i> M. Darrah, R. Humbert, D.A. Buch Poster presentation at the West Virginia Academy of Science Annual Meeting	<b>2019</b>
	<i>SEOBNRv3_opt - A Case Study in Code Optimization for the Benefit of LIGO Science</i>	<b>2018</b>

D.A. Buch, Z.B. Etienne  
 Oral presentation at the 28th Annual Midwest Relativity Meeting (University of Wisconsin - Milwaukee)

*Optimized Numerical Approximation of Einstein's Equations through Coordinate System Management* **2018**

Poster presentation at WVU Mathematics Department Capstone Day

*Experimental Validation of van der Pol Oscillator Theory in a Unijunction Transistor Circuit Model System* **2018**

Poster presentation at WVU Physics Department Spring 2018 Undergraduate Research Day

*Graphite-Lattice measurement through Matter-Wave Diffraction* **2017**

Poster presentation at WVU Physics Department Fall 2017 Undergraduate Research Day

*Evaluating a Simplified Approach to Protein Modeling Using Rotamer Recovery Tests and the Rosetta Software Suite* **2015**

Poster presentation and oral presentation at Raymond and Beverly Sackler Institute NSF-REU (Yale University)

## Teaching Experience

*Graduate Teaching Assistant* **Fall 2019**

Duke University, Durham, NC

- STA 250 - Statistical Inference

*Guest Instructor, MATH 694 (Professional Tools Seminar)* **Spring 2019**

West Virginia University, Morgantown, WV

- Data Analysis and Visualization with R

*Graduate Teaching Assistant (Mathematics)* **Fall 2018**

West Virginia University, Morgantown, WV

- Lab TA, grader for Calc 153

*GRE Tutor* **Fall 2017-Fall 2019**

NextStep Test Preparation

- "Premium" Tutor beginning Spring 2019

*WVU Athletic Tutor* **Fall 2016**

West Virginia University Athletic Department, Morgantown, WV

*Violin/Cello Instructor* **Fall 2013-Spring 2014**

School of Harmony, Beaver, WV

## Academic Activities

*NSF INCLUDES - Graduate Research Assistantship* **Spring-Summer 2019**

*LIGO Scientific Collaboration* **Summer 2016**

*Raymond and Beverly Sackler NSF-REU in Biophysics* **Summer 2015**

## Music

WVU Symphony Orchestra, WVU Undergraduate String Quartet, WVSO Vaughan Fellowship 2013, WV All-State Orchestra 2012-2014

**Service and  
Outreach**

WVU Math Club Vice-President, Treasurer (2017-2019)  
WV Chapter of the Sierra Club, Executive Committee (2017-2018)  
WVU Sierra Student Coalition, Vice President (2017-2018)  
WV Science Public Outreach Team Ambassador (2014-2016)  
Trinity Christian School Science Fair Judge (2019)  
WV Math and Science Bowl Judge (2015)

**Other Work  
Experience**

*Daily Athenaeum - Copy Writer* Spring 2016  
West Virginia University, Morgantown, WV

*Line Server* Fall 2013-Spring 2014  
Qdoba Mexican Grille, Beckley, WV