BENJAMIN SEPANSKI

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EDUCATION

University of Texas at Austin *August 2020 - Present*
Ph.D. Student GPA: 4.0
Computer Science, Programming Languages, UToPiA Research Group
Advisor: Dr. Işil Dillig

Baylor University *August 2016 - May 2020*
B.S. in Mathematics, Minor in Computer Science GPA: 4.0
45 hours graduate coursework in mathematics, computer science, and statistics
Advisor: Dr. Robert Kirby

PUBLICATIONS

Finite Elements for Helmholtz equations with a nonlocal boundary condition (with Dr. Robert Kirby and Dr. Andreas Klöckner) SIAM Journal on Scientific Computing, 2021

Augmented Hilbert series of numerical semigroups (with Christopher O'Neill, Jeske Glenn, and Vadim Ponomarenko) Integers 19 (June 3, 2019), #A32

PRESENTATIONS

Nonlocal UFL: Finite elements for Helmholtz equations with a nonlocal boundary condition FEniCS 2021

Augmented Hilbert series of numerical semigroups JMM 2018
Funded by the MAA Travel Grant for Undergraduates

RESEARCH

UToPiA Group August 2020 - Present
Automated Solutions in Programming Languages

· Actively researching automated tools to generate correct and efficient concurrent programs.

Lawrence Berkeley National Labs May 2021 - August 2021
Near-Roofline high-dimensional stencil computations on GPUs using Bricks

· DOE CSGF Practicum supervised by Dr. Samuel Williams and Dr. Hans Johansen.
· Extended the Bricks library to complex types
· Used roofline analysis and the bricks layout to optimize high-dimensional stencil computations from the GENE code–a phase-space SciDAC Fusion Code.

Baylor University January 2019 - August 2020
Combined FEM & BEM Methods for the Helmholtz Equation

· Applied nonlocal boundary integral equations to foster finite element methods on wave equations in an unbounded domain with Dr. Robert Kirby and Dr. Andreas Klöckner

Director's Summer Program May 2018 - August 2018
Summer Research Program at the National Security Agency

- Received Top Secret // Sensitive Compartmented Information clearance with Agency special background investigation and full scope polygraph examination
- Submitted detailed findings in an internal refereed technical paper
- Designed, implemented, and tested graph optimization algorithms
- Applied and extended language modeling and n-gram techniques to a high-priority classified project

Research Experience for Undergraduates at SDSU May 2017 - August 2017
Researched Numerical Semigroups at San Diego State University

AWARDS AND HONORS

2020 Department of Energy Computational Science Graduate Fellow

2019 Goldwater Scholar

Recipient of Mathematical Association of America (MAA)'s Student Travel Grant to the 2018 Joint Mathematics Meetings

2018 & 2019 Outstanding Math Student at the J. Harry and Anna Jeanes Academic Convocation

Recipient of Baylor Mathematics Scholarships:

Jerry Johnson Scholarship (2018 & 2019)	Gene & Ruth B Royer Scholarship (2018 & 2019)
KL & Vivian Carter Scholarship (2017)	Howard/Anita Rolf Scholarship (2017)
Schultz-Werba Math Scholarship (2017)	Carlile Engineering Scholarship (2016)

Received President's Gold Scholarship at Baylor University

2017 National Merit Scholar

TECHNICAL STRENGTHS

Computer Language Proficiency	Python, R, Java, C++, C
Software & Tools	Git, Unix Shell, LaTeX, ggplot, Excel, Maven, Firedrake/FEniCS Unifed Form Language
Some Experience With	x86-64 assembly language, Matlab, GAP (through Sage)