

# Espen Slettnes

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## Education

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**Abel Academy** Fall 2016 - Current  
*Castro Valley, CA* (Homeschool)

**UC Berkeley** Fall 2016 - Current  
*Berkeley, CA* (Concurrent Enrollment)

**Stanford Online High School** Fall 2019 - Current  
*Stanford, CA* (Part-time Enrollment)

**Art of Problem Solving** Spring 2013 - Current  
*Online School*

**G3 Online** Summer 2013 – Spring 2019  
(Language arts/humanity courses)

**Jensen Ranch Elementary** Fall 2010 - Spring 2016  
*Castro Valley, CA*

### Advanced high school and college math courses taken while in elementary and middle school

**MATH H185 Honors Introduction to complex Analysis (UC Berkeley)** Spring 2019  
Received a grade of A

**MATH 104 Introduction to Analysis (UC Berkeley)** Fall 2018  
Received a grade of A+

**MATH 172 Combinatorics (UC Berkeley)** Spring 2018  
Received a grade of A+

**MATH 130 The Classical Geometries (UC Berkeley)** Fall 2017  
Received a grade of A

**MATH 113 Abstract Algebra (UC Berkeley)** Spring 2017  
Received a grade of A+

**MATH 110 Linear Algebra (UC Berkeley)** Fall 2016  
Audited; Scored a perfect 100 at final exam

**Intermediate Programming with Python (AoPS)** Spring 2018  
Received a grade of A+

**Calculus (AoPS)** Fall 2016 - Spring 2017  
Received a grade of A; scored a perfect 5 on the AP Calculus BC exam

**Olympiad Geometry (AoPS)** Spring 2016  
Received a grade of A+

**Precalculus (AoPS)** Fall 2015 - Spring 2016  
Received a grade of A+

**Intermediate Algebra (AoPS)** Fall 2015 - Spring 2016  
Received a grade of A+

**Group Theory Seminar (AoPS)** Summer 2015  
Non-graded course

**Intermediate Counting & Probability (AoPS)** Fall 2015  
Received a grade of A+

**Intermediate Number Theory (AoPS)** Spring 2014  
Received a grade of A

### Programming Languages & Software

Python, The Wolfram Language, C++,  $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$ /TeXStudio, Asymptote, GeoGebra, etc.

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### Research and Publications

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#### Variations of the Cop and Robber Game on Graphs (October 2017)

E. Slettnes, C. Quines, S. Tsai, and J. Geneson. [arXiv: 1710.11352](https://arxiv.org/abs/1710.11352)

#### Expected Capture Time and Throttling Number for Cop versus (May 2019)

J. Geneson, C. Quines, E. Slettnes, and S. Tsai. [arXiv: 1902.058602](https://arxiv.org/abs/1902.058602)

#### Minimal Embedding Dimensions of Rectangle $k$ -Visibility Graphs (April 2018 - current)

E. Slettnes receiving guidance from Dr. Jesse Geneson of Iowa State University via a MIT PRIMES-USA research internship.

#### Extracting Tree-statistics from the Quasisymmetric Bernardi Polynomial (January 2019 – current)

L. Cai, E. Slettnes, and J. Zhou receiving guidance from Duncan Levear, PhD student of Brandeis University, via a MIT PRIMES-USA research internship.

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### Selected Competitions and Achievements

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**2019 USA Mathematical Olympiad (USAMO) & 2018 USA Junior Mathematical Olympiad (USAJMO)** February 2016 - April 2019

2019 USAMO qualifier; 2018 USAJMO qualifier.  
3 times AIME (American Invitational Mathematics Examination) qualifier.  
Scored 144/150 on AMC 12A for students in 12<sup>th</sup> grade and under (National Distinguished Honor Roll).

**2019 USA Computing Olympiad (USACO)** December 2016 -  
April 2019

Gold Division contestant ranked 115 among 572 pre-college students who competed in this division.  
Scored a perfect 1000/1000 at both Bronze and Silver divisions in 2017.

**2018 USA Physics Olympiad (USAPhO)** April 2018

Bronze Medal winner.  
<https://www.aapt.org/physicsteam/2018/upload/2018-Semi-Finalists-Medals-2.pdf>

**2018 Broadcom MASTERS** October 2018

(A program of Society for Science & the Public (SSP); a national science competition for US middle school students.)  
Winner of [First Place in Mathematics](#).

<p><b>2018 California Science &amp; Engineering Fair</b>  <a href="#">Project of the Year Award</a>, Junior Division.  <a href="#">1<sup>st</sup> Place in the category of Mathematical Sciences.</a></p>	April 2018
<p><b>2018 Alameda County Science and Engineering Fair</b>  Grand Award in middle school division; qualified for CA Science and Engineering Fair in April and nominated to enter Broadcom MASTERS 2018. <a href="#">ACSEF Press Release.</a></p>	March 2018
<p><b>USA Mathematical Talent Search (USAMTS)</b>  Gold winner; the only middle school student who scored a perfect 75/75 in <a href="#">2016-2017</a>.</p>	2016-2019
<p><b>Bay Area Mathematical Olympiad (BAMO)</b>  (Competed in solving 5 proof-type math problems in 4 hours)  BAMO 12 for students in 12<sup>th</sup> grade and under: Honorable Mention in 2019.  BAMO 8 for students in 8<sup>th</sup> grade and under: 2<sup>nd</sup> place winner in 2017; Young Student Achievement Award in 2015 &amp; 2016.</p>	February 2015 - 2019
<p><b>2017 AoPS/MIT PRIMES CrowdMath</b> (An online research competition open to college and advanced high school, and very advanced middle school students)  <a href="http://aops.com/polymath/mitprimes2017a/f">http://aops.com/polymath/mitprimes2017a/f</a>, username "goodbear".  <b>Project: Graph Algorithms and Applications</b>  Tied for 1<sup>st</sup> place with one other student; awarded the 2018 MIT PRIMES-USA internship.</p>	January – December, 2017
<p><b>The American Regions Math League (ARML)</b>  SFBA/NorCal A1 team; 3<sup>rd</sup> Place team nationally in 2019.</p>	June 2017 - 2019
<p><b>Berkeley Math Tournament (BMT)</b>  7<sup>th</sup> Place team among 100+ high school teams in 2018; 1<sup>st</sup> Place team at power round and 3<sup>rd</sup> Place team overall in 2019.</p>	March 2018 & 2019
<p><b>Stanford Math Tournament (SMT)</b>  1<sup>st</sup> Place team at Power round; 1<sup>st</sup> Place team overall.</p>	March 2019
<p><b>Caltech/Harvey Mudd Math Competition (CHMMC)</b>  4<sup>th</sup> Place team in 2017; 3<sup>rd</sup> Place team in 2018.</p>	November 2017 & 2018
<p><b>MathCounts California State Contest</b>  8<sup>th</sup> Place individual for NorCal.</p>	March 2018
<p><b>Stanford ProCo 2017</b>  (A computer programming contest for high school students)  Grand Prize in the Novice division, 2<sup>nd</sup> place in Speed Round, 1<sup>st</sup> place in Special Round.</p>	May 2017
<p><b>First LEGO League (FLL) Northern California Qualifier Tournament</b>  Best Robot Design Award</p>	Intel Folsom/Capital District, November 2016
<p><b>Berkeley Mini Math Team Tournament (BmMT)</b>  1<sup>st</sup> place overall; 1<sup>st</sup> place in puzzle round.</p>	November 2016
<p><b>Math Kangaroo in USA</b>  1<sup>st</sup> place national; 1<sup>st</sup> place in California.</p>	March 2016

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**Selected Awards & Honors**

<b><u>Caroline D. Bradley Scholar</u></b>	The CDB Class of 2018
One of the only merit-based, need-blind high school scholarship to exceptionally gifted students across the US.	
<b><u>World Science Scholars</u></b>	2018 Cohort
One of 45 pre-college students selected from five countries.	
<b><u>Spirit of Ramanujan: A Global Search for Undiscovered Mathematical Talent</u></b>	December 2017 & 2018
Twice SOR Fellowship winner for 2018 & 2019.	
<b>Julian C. Stanley Study of Exceptional Talent (SET) at Johns Hopkins University</b>	Member since Fall 2015
<b>Nicholas Green Distinguished Student Award</b>	2014 Recipient for California
<b>Davison Young Scholar (DYS)</b>	Member since November 2013
<b>Center of Talented Youth (CTY) at Johns Hopkins University</b>	Member since Fall 2012

### **Paid Job, Internship, & Volunteer Experience**

<b><u>MIT PRIMES-USA</u></b>	January 2018- current
<i>(A highly selective research internship/mentorship program for high school juniors and seniors.)</i>	
- The youngest participant in the program involving in 4 different research projects.	
<b><u>Berkeley Math Circle</u></b>	Fall 2017- current
<i>(After school math program for approximately 500 students in grades 1-12)</i>	
- Grader and coordinator for the BMC Monthly Contests, a proof-type contest for students in grade 5-12 since August 2017.	
- Instructor in the advanced class for grade 11-12 since August 2018.	
<b>Youth Euclid Association</b>	Spring 2018 - Fall 2018
<i>Teacher of an AMC 10/12 problem solving class for students in 6<sup>th</sup>-10<sup>th</sup> grade.</i>	
<b>Homework Help Center at the Castro Valley Library</b>	Fall 2016 - Spring 2017
<i>Tutor for elementary and middle school students</i>	

### **Conferences and Summer Programs**

<b>Joint Mathematics Meetings (JMM)</b>	Baltimore, MD, January 2019
Received an <i>Outstanding Poster Presentation award</i> for my individual research project " <i>Minimal Embedding Dimensions of Rectangle k-Visibility Graphs</i> ".	
	San Diego, CA, January 2018
Presented " <i>Throttling Numbers for Cops vs. Gamblers</i> " at the <b><u>Eighth Annual MIT PRIMES Conference</u></b> .	Cambridge, MA May 2018 & 2019
Presented " <i>Extracting Tree-statistics from the Quasisymmetric Bernardi Polynomial</i> " at the <b><u>Ninth Annual MIT PRIMES Conference</u></b> .	
<b>MAA MathFest</b>	Denver, CO
Presented " <i>Minimal Embedding Dimensions of Rectangle k-Visibility Graphs</i> "	August 2018

**Canada/USA Mathcamp**

*A 5-week academic summer program for both domestic and international students age 13-18 with talent and passion for math*

University of Puget Sound, WA  
Colorado School of Mines, CO  
July 2017 & July 2018

**League of Creative Minds**

*A selective parliamentary style speech and debate program*

Stanford University, CA  
June 2017

**AwesomeMath Summer Program**

*3-week intensive summer program for mathematically gifted students who enjoy competition math from around the world*

University of Puget Sound, WA  
July 2016 & 2019

**Epsilon Camp**

*2-week intensive residential program for young gifted children who are captivated by math*

Colorado College, CO  
Seattle Pacific University, WA  
July 2013 & July 2014

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**References**

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Marisa Debowsky: Executive Director, Canada/USA Mathcamp; email <[marisa@mathcamp.org](mailto:marisa@mathcamp.org)>

Dr. Jesse Geneson: Postdoctoral Scholar, Iowa State University; email <[geneson@gmail.com](mailto:geneson@gmail.com)>

Dr. Khrystyna Serhiyenko: NSF Postdoc, UC Berkeley; email <[khrystyna.serhiyenko@berkeley.edu](mailto:khrystyna.serhiyenko@berkeley.edu)>

Dr. Roy Smith: Professor Emeritus, the University of Georgia; email <[rsmith99@gmail.com](mailto:rsmith99@gmail.com)>

Dr. Zvezdelina Stankova: Teaching Professor, UC Berkeley; email <[stankova@berkeley.edu](mailto:stankova@berkeley.edu)>