

THE WILLIAM LOWELL PUTNAM MATHEMATICAL COMPETITION

ANNOUNCEMENT OF WINNERS of the seventy-sixth competition held on December 5, 2015

WINNING TEAMS

<i>Rank</i>	<i>School</i>	<i>Team Members (in alphabetical order)</i>
1	MASSACHUSETTS INSTITUTE OF TECHNOLOGY	Mark A. Sellke, Bobby C. Shen, and David H. Yang
2	CARNEGIE MELLON UNIVERSITY	Joshua Brakensiek, Linus Hamilton, and Thomas Swayze
3	PRINCETON UNIVERSITY	Rodrigo S. Angelo, Andre A. Arslan, and Eric D. Schneider
4	STANFORD UNIVERSITY	Jie Jun Ang, Gyujin Oh, and Albert R. Zhang
5	HARVARD UNIVERSITY	Calvin Deng, Ravi Jagadeesan, and David W. Stoner

The first place team receives an award of \$25,000 and each member of the team receives \$1,000. The awards for second place are \$20,000 and \$800; for third place, \$15,000 and \$600; for fourth place \$10,000 and \$400; and for fifth place \$5,000 and \$200.

In each of the following categories, the listing is in alphabetical order.

THE PUTNAM FELLOWS — THE SIX HIGHEST RANKING INDIVIDUALS

Each receives an award of \$2,500.

PAKAWUT JIRADILOK	Harvard University
BUMSOO KIM	Princeton University
GYUJIN OH	Stanford University
DANIEL SPIVAK	University of Waterloo
DAVID H. YANG	Massachusetts Institute of Technology
YUNKUN ZHOU	Massachusetts Institute of Technology

THE NEXT TEN HIGHEST RANKING INDIVIDUALS

Each receives an award of \$1,000.

JOSHUA D. BRAKENSIEK	Carnegie Mellon University
EVAN CHEN	Massachusetts Institute of Technology
CALVIN DENG	Harvard University
DONGRYUL KIM	Harvard University
SAMMY Y. LUO	Massachusetts Institute of Technology
BOBBY C. SHEN	Massachusetts Institute of Technology
STEFAN SPATARU	Harvard University
DAVID W. STONER	Harvard University
XIAOYU XU	Princeton University
TIANYOU ZHOU	Massachusetts Institute of Technology

THE NEXT TEN HIGHEST RANKING INDIVIDUALS

Each receives an award of \$250.

ANDRE A. ARSLAN	Princeton University
H Aidong Gong	University of Illinois, Urbana-Champaign
LINUS U. HAMILTON	Carnegie Mellon University
XIAOYU HE	Harvard University
YANG LIU	Massachusetts Institute of Technology
SARANESH PREMBABU	Massachusetts Institute of Technology
ZHUO QUN SONG	Princeton University
VIKRAM SUNDAR	Harvard University
SCOTT C. WU	Harvard University
HENGYUN ZHOU	Massachusetts Institute of Technology

HONORABLE MENTION — TEAMS

UNIVERSITY OF CALIFORNIA, LOS ANGELES
DUKE UNIVERSITY
HARVEY MUDD COLLEGE
UNIVERSITY OF ILLINOIS, URBANA-CHAMPAIGN
WASHINGTON UNIVERSITY, ST. LOUIS

Emre Girgin, Ufuk Kanat, Dillon L. Zhi
Feng Gui, Alexandru Milu, Tony Qiao
Adam R. Busis, Abram Sanderson, Natchamon Suaysom
Zehan Chao, Haidong Gong, Yifei Li
Philip Bonneville, Zhengdao Chen, Anthony V. Grebe

HONORABLE MENTION — INDIVIDUALS

ARKA ADHIKARI, Princeton University
JAMES Z. ALLEN, Stanford University
JIE JUN ANG, Stanford University
RODRIGO S. ANGELO, Princeton University
MATTHEW W. BABBITT, Massachusetts Institute of Technology
MATTHEW S. BRENNAN, Massachusetts Institute of Technology
ADAM R. BUSIS, Harvey Mudd College
BRIAN CHEN, Massachusetts Institute of Technology
JINGWEN CHEN, Massachusetts Institute of Technology
LEWIS CHEN, University of California, Berkeley
ERNEST Y. CHIU, Massachusetts Institute of Technology
ALEXANDER J. CLIFTON, Massachusetts Institute of Technology
ANDRE M. B. COSTA, Rice University
NOAH A. FECHTOR-PRADINES, Harvard University
YAKIR M. FORMAN, Yeshiva University
YIBO GAO, Massachusetts Institute of Technology
ANTHONY V. GREBE, Washington University, St. Louis
BRICE HUANG, Massachusetts Institute of Technology
RAVI JAGADEESAN, Harvard University
KRITKORN KARNTIKOON, Massachusetts Institute of Technology
ALEXANDER R. KATZ, Massachusetts Institute of Technology
SAMUEL KORSKY, Massachusetts Institute of Technology
JUN JIE JOSEPH KUAN, Massachusetts Institute of Technology
GIDEON J. LEEPER, California Institute of Technology
KEVIN Q. LI, Stanford University
DONOVAN K. LIEU, University of California, Berkeley
KUAN-YU LIN, Massachusetts Institute of Technology
PATRICK H. LISCIO, Massachusetts Institute of Technology
YUTAO LIU, Massachusetts Institute of Technology
BEN S. LOWENSTEIN, Harvey Mudd College
CLARK R. LYONS, University of California, Berkeley
HENRY W. MALTBY, University of California, Berkeley

ERIC L. MANNES, Massachusetts Institute of Technology
ALEXANDRU MILU, Duke University
MAX K. MURIN, Massachusetts Institute of Technology
SHYAM S. NARAYANAN, Harvard University
WEERACHAI NEERANARTVONG, Massachusetts Institute of Technology
ERIC M. NEYMAN, Princeton University
MINH PHUONG NGUYEN, Stony Brook University
SUNG GI PARK, Massachusetts Institute of Technology
HUY T. PHAM, Stanford University
NIPUN PITIMANAAREE, Massachusetts Institute of Technology
ZACHARY H. POLANSKY, University of Rochester
TIMOTHY RATIGAN, Princeton University
BRIAN R. RIEDEL, Carnegie Mellon University
MAXIMILIAN E. SCHINDLER, University of Chicago
ERIC D. SCHNEIDER, Princeton University
MARK A. SELLKE, Massachusetts Institute of Technology
HONGJIAN SHI, Indiana University
MEL Y. SHU, Princeton University
DAVID J. SPENCER, University of North Carolina, Chapel Hill
THOMAS E. SWAYZE, Carnegie Mellon University
UTHAIPON TANTIPONGPIPAT, University of Richmond
YING HONG THAM, Stanford University
ASHWATH THIRUMALAI, Massachusetts Institute of Technology
VICTOR Y. WANG, Massachusetts Institute of Technology
MATTHEW A. WEIDNER, California Institute of Technology
VICTOR Z. XU, Carnegie Mellon University
ALBERT R. ZHANG, Stanford University
ZHIVKO N. ZHECHEV, Stanford University
DILLON L. ZHI, University of California, Los Angeles
KEVIN ZHOU, Massachusetts Institute of Technology
YUZHOU ZOU, University of Chicago

ELIZABETH LOWELL PUTNAM PRIZE

The winner receives an award of \$1,000.

DANIELLE WANG

Massachusetts Institute of Technology

QUESTIONS COMMITTEE

David Savitt (Chair), Johns Hopkins University; Henry Cohn, Microsoft and Massachusetts Institute of Technology; Byron Walden, Santa Clara University.

A total of 4275 students from 554 colleges and universities in Canada and the United States participated in the Competition. There were teams from 447 institutions. More complete details will appear in the *American Mathematical Monthly*.

March 17, 2016 Leonard F. Klosinski, (Santa Clara University) Director; Gerald L. Alexanderson (Santa Clara University) and Mark Krusemeyer (Carleton College), Associate Directors

THE WILLIAM LOWELL PUTNAM MATHEMATICAL COMPETITION

March 16, 2016

Dear Colleague:

Enclosed is a report on your contestants in the 76th Competition and your team rank (if it was in the range 1—150), a list of the top 500 contestants (which you may wish to share with your committee on graduate students), an announcement of winners, and a list of participating schools. Some tables are given below. Your contributions to the Competition are greatly appreciated.

Leonard F. Klosinski, Director
Gerald L. Alexanderson, Associate Director
Mark Krusemeyer, Associate Director

Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank
99	1	63	25.5	44	72.5	28	188.5	17	415	1	1678
90	2.5	62	27	43	75.5	27	191	16	416.5	0	3092
89	4	61	30.5	42	81.5	26	193	15	420.5		
82	5.5	60	35.5	41	87.5	25.9	195	14	429		
81	8	59	39.5	40	97	25.8	196.5	13	452.5		
78	11	57	42.5	39	108.5	25.7	198	12	504.5		
77	13.5	56	44.5	38	114	25.6	199	11	640.5		
74	15.5	54	46	36	116	25	200.5	10	945		
72	17	53	48.5	35	117.5	24	205.5	9	1178.5		
71	18.5	52	51.5	34	120.5	23	216	8	1222.5		
70	20	51	54.5	33	126	22	235.5	6	1236		
68	21	50	62	32	135	21	273.5	5	1238		
66	22	49	68	31	146.5	20	343.5	4	1246		
65	23	48	69.5	30	163.5	19	399	3	1277.5		
64	24	45	71	29	180.5	18	412	2	1375		

FREQUENCY DISTRIBUTION OF PROBLEM SCORES OF THE TOP 199 CONTESTANTS

	A1	A2	A3	A4	A5	A6	B1	B2	B3	B4	B5	B6	total
10	61	62	32	52	13	4	61	62	32	70	16	0	465
9	27	10	1	21	1	3	27	10	1	10	8	0	119
8	7	3	6	4	6	1	7	3	6	3	4	3	53
7	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0
2	41	3	18	15	22	2	41	3	18	5	7	1	176
1	32	8	6	20	4	0	32	8	6	17	8	0	141
0	10	60	81	33	26	53	10	60	81	39	30	27	510
blank	21	53	55	54	127	136	21	53	55	55	126	168	924

April 5, 2016

William Lowell Putnam Mathematical Competition

CORRECTED FREQUENCY DISTRIBUTION OF PROBLEM SCORES OF THE TOP 199 CONTESTANTS

	A1	A2	A3	A4	A5	A6	B1	B2	B3	B4	B5	B6	total
10	165	109	99	52	13	4	61	62	32	70	16	0	683
9	17	8	22	21	1	3	27	10	1	10	8	0	128
8	7	3	1	4	6	1	7	3	6	3	4	3	48
7	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0
2	3	12	13	15	22	2	41	3	18	5	7	1	142
1	0	2	6	20	4	0	32	8	6	17	8	0	103
0	5	45	23	33	26	53	10	60	81	39	30	27	432
blank	2	20	35	54	127	136	21	53	55	55	126	168	852