

THE WILLIAM LOWELL PUTNAM MATHEMATICAL COMPETITION

ANNOUNCEMENT OF WINNERS of the seventy-third competition held on December 1, 2012

WINNING TEAMS

<i>Rank</i>	<i>School</i>	<i>Team Members (in alphabetical order)</i>
1	HARVARD UNIVERSITY	Eric K. Larson, Evan M. O'Dorney and Allen Yuan
2	MASSACHUSETTS INSTITUTE OF TECHNOLOGY	Benjamin P. Gunby, Brian C. Hamrick, and Jonathan Schneider
3	UNIVERSITY OF CALIFORNIA, LOS ANGELES	Xiangyi Huang, Tudor Padurariu, and Dillon Zhi
4	STONY BROOK UNIVERSITY	Thao T. Do, Dat Pham Nguyen, and Kevin R. Sackel
5	CARNEGIE-MELLON UNIVERSITY	Michael T. Druggan, Albert Gu, and Linus V. Hamilton

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 FIVE HIGHEST RANKING INDIVIDUALS

Each receives an award of \$2,500.

BENJAMIN P. GUNBY	Massachusetts Institute of Technology
ERIC K. LARSON	Harvard University
MITCHELL M. LEE	Massachusetts Institute of Technology
ZIPEI NIE	Massachusetts Institute of Technology
EVAN M. O'DORNEY	Harvard University

THE NEXT ELEVEN HIGHEST RANKING INDIVIDUALS

Each receives an award of \$1,000.

SORATHAN CHATURAPRUEK	Harvey Mudd College
OCTAV I. DRAGOI	Harvard University
WHAN GHANG	Massachusetts Institute of Technology
LINUS V. HAMILTON	Carnegie-Mellon University
ZHAORONG JIN	California Institute of Technology
XIAOSHENG MU	Yale University
TUDOR PADURARIU	University of California, Los Angeles
SUNG GI PARK	Massachusetts Institute of Technology
SZU-PO WANG	Massachusetts Institute of Technology
TIANYOU ZHOU	Massachusetts Institute of Technology
ALEX J. ZHU	Massachusetts Institute of Technology

THE NEXT NINE HIGHEST RANKING INDIVIDUALS

Each receives an award of \$250.

JOSHUA H. ALMAN	Massachusetts Institute of Technology
HAN HAO	New York University
XIANGYI HUANG	University of California, Los Angeles
HOLDEN LEE	Massachusetts Institute of Technology
BOWEI LIU	Princeton University
ARJUN R. PURANIK	Stanford University
JEFFREY D. SHEN	Massachusetts Institute of Technology
KA YU TAM	Massachusetts Institute of Technology
TONG ZHAN	Yale University

HONORABLE MENTION—TEAMS

BRIGHAM YOUNG UNIVERSITY
NORTHWESTERN UNIVERSITY
PRINCETON UNIVERSITY
UNIVERSITY OF BRITISH COLUMBIA, VANCOUVER
YALE UNIVERSITY

Peter H. Baratta, Samuel Dittmer, and Hiram B. Golze
Siyuan Cai, Ewain Gwynne, and Zeyu Wang
Wesley Cao, Matthew C. Superdock, and Qiuyi (Richard) Zhang
Karlming Chen, (Ronnie) Ruiyuan Chen, and Eric Naslund
Danqing Liu, Xiaosheng Mu, and Tong Zhan

HONORABLE MENTION—INDIVIDUALS

ARKA ADHIKARI, Princeton University
FRANK D. BAN, University of Waterloo
ROBI C. BHATTACHARJEE, Massachusetts Institute of Technology
FRANCIS T. BOZGAN, University of California, Los Angeles
JUSTIN T. BRERETON, Massachusetts Institute of Technology
LUCAS CAMELO SA, Massachusetts Institute of Technology
KANGNING (COLIN) CHEN, University of Waterloo
KARLMING CHEN, University of British Columbia
KEVIN Y. CHEN, Massachusetts Institute of Technology
RUIYUAN (RONNIE) CHEN, University of British Columbia
ALEXANDER R. COLE, Massachusetts Institute of Technology
DAVID A. CORWIN, Princeton University
MICHAEL COHEN, Massachusetts Institute of Technology
EUGENI S. DIMITROV, Princeton University
THAO T. DO, Stony Brook University
MICHAEL T. DRUGGAN, Carnegie-Mellon University
MILES D. EDWARDS, Indiana University
ZHENG FAN, Massachusetts Institute of Technology
RAVI K. FERNANDO, Stanford University
MENDEL M. FRIEDMAN, Touro College
HIRAM B. GOLZE, Brigham Young University
EWAIN N. GWYNNE, Northwestern University
BRIAN C. HAMRICK, Massachusetts Institute of Technology
XIAOYU HE, Harvard University
JIAOYANG HUANG, Massachusetts Institute of Technology
HYUN SUB HWANG, Massachusetts Institute of Technology
SANTHOSH KARNIK, Georgia Institute of Technology
INDRANEEL G. KASMALKAR, University of California, Berkeley
SAM G. KELLER, Stanford University
BUMSOO KIM, Princeton University

KUAN-YU LIN, Massachusetts Institute of Technology
ALEKSANDAR A. MAKELOV, Harvard University
ERIC L. MANNES, Massachusetts Institute of Technology
OFIR NACHUM, Massachusetts Institute of Technology
DAT PHAM NGUYEN, Stony Brook University
TUNG D. NGUYEN, Illinois Wesleyan University
ANTE QU, Princeton University
JOSEPH L. RICHEY, University of Michigan, Ann Arbor
ZEV S. ROSENGARTEN, Princeton University
KEVIN R. SACKEL, Stony Brook University
JONATHAN T. SCHNEIDER, Massachusetts Institute of Technology
TONGJIA SHI, Harvey Mudd College
ALEXANDER D. SMITH, Princeton University
HAO SUN, University of Waterloo
MATTHEW C. SUPERDOCK, Princeton University
BRANDON V. TRAN, Massachusetts Institute of Technology
NICHOLAS G. TRIANTAFILLOU, University of Michigan, Ann Arbor
MARK L. VELEDNITSKY, Massachusetts Institute of Technology
ANDERSON S. WANG, Massachusetts Institute of Technology
ANTHONY Y. WANG, Massachusetts Institute of Technology
SUNGSEOB WHANG, Brown University
MICHAEL Q. WU, Massachusetts Institute of Technology
GEORGE L. XING, Massachusetts Institute of Technology
KERRY K. XING, Massachusetts Institute of Technology
DAI YANG, Massachusetts Institute of Technology
WIJIT YANGJIT, Rensselaer Polytechnic Institute
ALLEN YUAN, Harvard University
ZEYIN ZHANG, University of Michigan, Ann Arbor
JONATHAN ZUNG, University of Toronto

QUESTIONS COMMITTEE

George T. Gilbert (Chair), Texas Christian University; Djordje Miličević, Bryn Mawr College; and Hugh Montgomery, University of Michigan, Ann Arbor.

A total of 4277 students from 578 colleges and universities in Canada and the United States participated in the Competition. There were teams from 402 institutions. More complete details will appear in the *American Mathematical Monthly*.

THE WILLIAM LOWELL PUTNAM MATHEMATICAL COMPETITION

March 7, 2013

Dear Colleague:

Enclosed is a report on your contestants in the 73rd 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

<u>Score</u>	<u>Rank</u>	<u>Score</u>	<u>Rank</u>	<u>Score</u>	<u>Rank</u>	<u>Score</u>	<u>Rank</u>	<u>Score</u>	<u>Rank</u>
100	1	53	27.5	33	180	20	713	1	1927
87	2	52	32.5	32.9	184.5	19	870.5	0	3149.5
81	3	51	39.5	32.8	186.5	18	936.5		
80	4	50	49	32.7	188	17	958		
78	5	49	59	32.6	189	16	961.5		
71	6	48	68.5	32	203.5	15	963		
69	7	47	77	31	239	14	965		
68	8	45	81	30	319.5	13	974		
67	9.5	44	83	29	415	12	1003.5		
66	11	43	84	28	465	11	1081.5		
64	12	42	87	27	481	10	1360.5		
62	13	41	97	26	485.5	9	1627		
61	14	40	120.5	25	488.5	8	1694		
60	15.5	39	146.5	24	490.5	5	1718		
59	18	38	163.5	23	495.5	4	1722		
58	22.5	37	171.5	22	517.5	3	1731		
54	26	34	174.5	21	569	2	1784.5		

FREQUENCY DISTRIBUTION OF PROBLEM SCORES OF THE TOP 189 CONTESTANTS

	A1	A2	A3	A4	A5	A6	B1	B2	B3	B4	B5	B6	total
10	142	151	49	5	8	3	174	84	44	25	2	15	702
9	28	21	31	0	0	3	9	14	2	3	0	0	111
8	14	8	13	0	1	0	0	12	3	0	1	0	52
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	2	0	16	0	3	0	3	20	4	3	0	3	54
1	0	0	11	2	2	0	2	17	27	1	1	10	73
0	1	7	25	97	60	52	0	20	48	95	18	33	456
blank	2	2	44	85	115	131	1	22	61	62	167	128	820