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The MAA undergraduate poster session 1991–2013

Joyati Debnath and Joseph A. Gallian



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(Communicated by Darren A. Narayan)

We provide a historical report of the undergraduate poster session at the annual joint meetings of the American Mathematical Society and the Mathematical Association of America from its inception in 1991 until 2013. We also provide data on the number of undergraduates attending the joint meetings and the number giving talks.

From a humble beginning in 1991 with 12 posters involving fewer than 20 students, no judges, and no prizes, the Mathematical Association of America (MAA) undergraduate poster session at the Joint Mathematics Meetings (JMM) has grown to 304 posters representing the work of 487 students, 234 judges, and 50 prizes in 2013. The idea for the poster session came from the newly formed MAA subcommittee of the Committee on the Undergraduate Program in Mathematics (CUPM) on research by undergraduates chaired by Lester Senechal. Because of the small number of participants in 1991, there were no follow-up poster sessions in 1992 or 1993. John Greever organized the 1994 and 1995 sessions, followed by Judy Palagallo in 1996, Mario Martelli in 1997, and Palagallo again in 1998. Participation doubled in 1999 when Martelli and Aparna Higgins were organizers and doubled again in 2000 with Martelli as organizer. From 1999 until 2005 Higgins was host of the award ceremony.



Figure 1. Aparna Higgins announcing the winners.



Figure 2. Judges entering scores.

In 2000 and the next few years thereafter, the number of students desiring to participate exceeded the capacity of the space available at the convention site. In 2003 floor space was so tight that the poster session was spread over two time slots. Martelli continued as the organizer through 2006, with Diana Thomas joining him that year. Thomas served as organizer from 2007 to 2010, followed by Joyati Debnath in 2011.

Starting in 2008 the poster session got a boost when the MAA received a multiyear NSF grant for nearly \$500,000 to support student travel to the joint meetings.

As the number of participants grew over the years, so did the number of prize sponsors. For the poster session in 1994 the three judges pitched in \$50 each toward three prizes of \$75, \$50 and \$25. Starting in 1995 the Council on Undergraduate Research (CUR) began contributing \$300 for three prizes at \$100 each. By around 2000 there were fifteen \$100 prizes, with the AMS, the MAA, and CUR all contributing. Also around that time the AMS and MAA began providing refreshments for all attendees. The number of prizes more than doubled in 2004 with additional sponsorship from the Educational Advancement Foundation. The number reached 37 in 2008, and by 2010 the list of prize sponsors had swelled to include the Center for Undergraduate Research in Mathematics, Educational Advancement Foundation,



Figure 3. Judges registration.

Brigham Young University Mathematics Department, NSF, SIAM, AMS, MAA, AWM, and Pi Mu Epsilon.

As a chair of the MAA subcommittee on research by undergraduates, Michael Dorff gave out 33 one-hundred-dollar bills for 33 awards in 2010 and 35 for prizes in 2011. The feeling was that winners would enjoy receiving the \$100 bills at the awards ceremony rather than receiving a check from the MAA weeks later. Regrettably, it was decided that because of the logistics involved with so many sponsors and the difficulty of finding funding, beginning in 2012 prize-winners would receive certificates instead.

Offering a large number of prizes at poster sessions with hundreds of participants would be impractical without the availability of many dedicated people willing to devote an entire afternoon to the difficult task of judging the posters. The establishment of Project NExT in 1994 provided the perfect source for an enthusiastic pool of judges. Every time there was a shortage of judges the Project NExT listservs were used to fill the gap. The 2004 poster session was the first at which there were judges who were themselves participants in the poster sessions as students. Moreover, two of the three were Project NExT fellows.

It is no coincidence that the rise in popularity of the poster session mirrors the increase in the number of ways in which the joint meetings became more attractive for undergraduates. When the first poster session was held in 1991, the JMM



Figure 4. Undergraduate poster session, JMM 2012.



Figure 5. Angel Pineda training judges, JMM 2013.

registration form did not even have a category for undergraduates. Seventy-one students registered for the inaugural undergraduate student category in 1993. At the same time the MAA subcommittee initiated the first poster session in 1991, it also organized a three-part special session for research talks by undergraduates featuring 22 speakers representing the work of 54 students. The Association for Women in Mathematics gave the first Alice T. Schafer Prize for Excellence in Mathematics by an Undergraduate Woman at the 1991 JMM as well. In 1994 there was a four-part special session for research by undergraduates at joint meetings with 38 talks representing the work of 68 students. The first AMS–MAA Morgan Prize for Outstanding Research by an Undergraduate was given at the 1995 meetings. In 1996 the JMM program listing began identifying speakers as undergraduates. There was not a designated session for research talks by undergraduates that year, but six spoke at contributed paper sessions, four of whom were from the same REU.

By 2009 student participants in the poster session were able to meet electronically to organize social events and share tips on preparing posters. That same year the MAA had a Facebook site for the poster session participants. In 2012 a video about the poster session was posted on YouTube. (See [Resources](#) for the URL.)

To give a sense of the demographics of the 304 posters at the 2013 JMM we provide the following data: 487 students from 281 institutions, 46 states, Puerto Rico, and foreign countries; 220 male and 267 female; 184 from REUs; 7 high school students; 24 sophomores; 128 juniors; 317 seniors; 20 first-year graduate students (the research was done as undergraduates); 1 post-baccalaureate student; 234 judges; and 50 winning posters.

Students say that the most important benefits from participating in the JMM is networking, mingling with other undergraduates, making friends, going to social events, finding out what other students are doing and which graduate schools others are applying to, and discussing mathematics. Students enjoy being among the thousands of mathematicians from across the United States at the meeting and feel special being there. Students who enter the poster session and give talks find it stimulating.



Figure 6. Judges writing comments.

Of course there are many factors that have contributed to popularity of the poster session as a venue for undergraduates to present their research. By the mid to late 1990s the number of REU programs had grown substantially, and the MAA was offering an annual JMM minicourse for faculty and Project NExT an annual four-hour course on how to involve undergraduates in research.

Even before the first poster session in 1991, activities for undergraduates at the joints meetings were being created. Richard Neal started the JMM Problem Solving Competition in 1987. In 1988 Neal and his wife Araceli established the first JMM



Figure 7. Annie Baer waiting for the students to pick up award certificates, JMM 2013.

Student Hospitality Center, serving as hosts for many years. There, undergraduates hang around, do mathematical puzzles, read copies of *Math Horizons*, attend meet-the-speaker events, and enjoy refreshments at the student reception. Over 300 students visited the center at the 2013 JMM.

The first meeting of the MAA Committee on Student Chapters, chaired by Howard Anton, was held at the 1991 JMM. In 1994 that committee, under the new name of the MAA Committee on Undergraduate Student Activities and Chapters (CUSAC), began sponsoring the poster session, the Hospitality Center, sessions for student talks, social opportunities for undergraduates at the JMM, and established an annual invited 50-minute lecture for undergraduates.

Members of CUSAC and MAA staff are continually improving the poster session experience. Michael O’Leary created software for avoiding conflicts of interest in assigning judges and automating the scoring of the posters. He handled the assigning of judges and scoring for the 2007–2010 sessions. Students now receive feedback about their abstracts and presentations, and registration for students and judges has been streamlined.

Posters are judged on three criteria: mathematical content, answers to questions, and poster design, with two to four judges assigned to each poster. Posters by individuals, teams, or REU participants are not judged differently.

The JMM has become a meeting that offers many exciting options and opportunities for undergraduates and is a meeting at which they feel welcome. In 2013, for the first time, undergraduate students at the JMM outnumbered graduate students 929 to 917. Undergraduates comprised 16.4% of the mathematicians registered. From the prestigious invited 50-minute lectures to the 10-minute contributed papers and posters by undergraduates, vertical integration of the mathematics research community is taking place. The expansion of the mathematics research community to include undergraduates is the culmination of the efforts of hundreds of dedicated people over two decades. We thank them for their efforts.

We conclude with Tables 2–3, which provide data about the participation of undergraduates at the JMM.

Year	Number	Year	Number	Year	Number
1996	6	2002	38	2008	62
1997	23	2003	50	2009	94
1998	22	2004	38	2010	95
1999	23	2005	51	2011	137
2000	35	2006	43	2012	152
2001	15	2007	64	2013	187

Table 1. Number of talks by undergraduates at the JMM.

Year	Number	Site	Organizer/miscellaneous data
1991	12	San Francisco	Greever
1992	None	Baltimore	None
1993	None	San Antonio	None
1994	19	Cincinnati	Greever
1995	17	San Francisco	Greever
1996	32	Orlando	Palagallo
1997	13	San Diego	Martelli
1998	36	Baltimore	Palagallo
1999	68	San Antonio	Higgins and Martelli
2000	140	Washington D.C.	Martelli
2001	148	New Orleans	Martelli
2002	185	San Diego	Martelli
2003	200	Baltimore	Martelli; (2 parts) 15 prizes
2004	110	Phoenix	Martelli; 115 judges, 32 prizes
2005	120	Atlanta	Martelli
2006	130	San Antonio	Martelli and Thomas
2007	175	New Orleans	Thomas
2008	170	San Diego	Thomas; 260 students, 200 judges, 37 prizes
2009	220	Washington D.C.	Thomas; 300 students, 250 judges, 33 prizes
2010	241	San Francisco	Thomas; 367 students, 173 judges
2011	265	New Orleans	Debnath; 300 students, 179 judges
2012	313	Boston	Debnath; 525 students, 189 judges
2013	304	San Diego	Debnath; 487 students, 234 judges, 50 prizes

Table 2. Poster session data.

Year	Number	Year	Number	Year	Number
1993	71	2000	275	2007	476
1994	153	2001	276	2008	527
1995	125	2002	300	2009	650
1996	141	2003	377	2010	683
1997	109	2004	292	2011	759
1998	176	2005	361	2012	945
1999	236	2006	377	2013	929

Table 3. Undergraduate attendance at the JMM.

Resources

- Mario Martelli, Report on the undergraduate student poster session, http://www.maa.org/news/student_poster.html

- Diana Thomas, The undergraduate poster session, <http://www.maa.org/pubs/febmar09pg31-32.pdf>
- Article about 2004 poster session. <http://www.ams.org/meetings/in-cooperation-with/ugradposters-04>
- 2008 prize winners http://www.maa.org/students/CUSAC/poster_session.html
- 2009 prize winners <http://www.maa.org/students/undergrad/poster09.html>
- 2010 prizes winners <http://www.maa.org/students/undergrad/poster10.html>
- 2010 poster abstracts <http://www.maa.org/news/postsess10.pdf>
- 2011 poster winners <http://www.maa.org/students/undergrad/poster11.html>
- 2011 poster abstracts http://www.maa.org/students/undergrad/DRAFT_StudentPosterAbstractBook.pdf
- 2012 prize winners <http://www.maa.org/students/undergrad/pastwinners.html>
- 2012 poster abstracts <http://www.maa.org/students/PosterSessionAbstractsJMM12.pdf>
- 2012 YouTube video <http://www.youtube.com/watch?v=KjdAYSPTVYU>

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