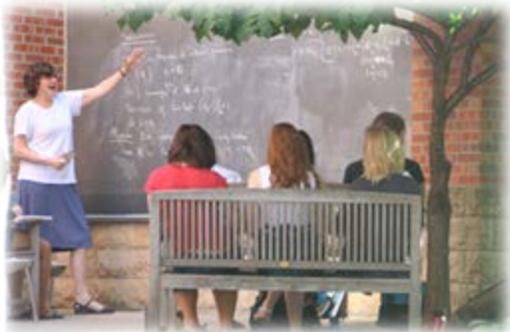


Carleton College Summer Math Program (SMP)

“Even today, I regularly feel the effects of the four weeks I spent in Northfield, Minnesota, seventeen years ago,” Suzanne Boyd, Associate Professor of Mathematical Sciences, University of Wisconsin-Milwaukee, commented in her letter of support nominating the Carleton Summer Mathematics Program for Women (SMP) for the AMS Programs That Make a Difference award. In 1995, during the summer between her sophomore and junior years of college, Boyd was a participant in the first year of the Carleton program. “During those four weeks,” Boyd summarized, “I found my research area (dynamical systems) and became connected to a network of peers—women in mathematics. That network has continued to grow.” That “network” now includes more than 300 other women who have benefited from similar experiences at SMP.

Nearly twenty years ago, Carleton Professors Deanna Haunsperger and Stephen Kennedy launched SMP as a summer opportunity to advance undergraduate women with an interest in mathematics. In 2013 SMP celebrated its seventeenth anniversary. In the intervening years, SMP has welcomed 308 “official” undergraduate participants along with dozens of other women serving as instructors, TAs, speakers, and other guests. Of the 308 summer participants, sixty-two now hold Ph.D.’s (while many are still currently enrolled as undergraduate and graduate students). Based on past trends, Haunsperger and Kennedy project that, out of the eighteen students who take part each summer, eight will go on to finish a Ph.D. in mathematics. That is a striking statistic in light of national trends (see, for example, “Women in science, technology, engineering and math (STEM): A fact sheet” by Kristine De Welde, Sandra Laursen, and Heather Thiry, Sociologists for Women in Society, 2007.)



*Margaret Robinson (Mt. Holyoke) teaching p -adic Analysis in the outdoor classroom at SMP.
Photo courtesy of Carleton College Summer Mathematics Program.*

How do they do it? SMP invites women who have completed one or two years of undergraduate work to the Carleton College campus each summer for four weeks of classes and activities. The SMP students love math, but when they first arrive at the program, most have no understanding of what it means to be a mathematician, let alone what it would take to become one. During the program, the directors, faculty, teaching assistants, and mathematicians in residence provide detailed information about exactly what the students need to do over the next few years in order to prepare for graduate school and succeed in completing a Ph.D. in mathematics.

The students take two intense courses to prepare them for the rigors of graduate study. These classes are designed to (i) introduce a student to an area of mathematics that she would probably

not find at her home institution, (ii) provide an intensely challenging experience, and (iii) offer a meaningful opportunity for collaborative learning. Women faculty with strong research programs and distinguished teaching records offer these courses that motivate students to learn advanced mathematics. Over the years, SMP class topics have included Morse theory, coding theory, game theory, fuzzy logic, low-dimensional dynamics, knots, and topology.

Beyond the classroom instruction, SMP students engage in a variety of social activities (ranging from home-cooked dinners to an excursion to the Mall of America in nearby Minneapolis), attend biweekly colloquia on a variety of topics in mathematics, and hear panels on practical topics for navigating a career in mathematics. Mary Ellen Rudin gave an SMP colloquium, for example. (Imagine that? An eighteen-year-old learning about topology for the first time in her life from Mary Ellen Rudin!) Joe Gallian, who has run an REU program at the University of Minnesota-Duluth since 1977, is the lone male speaker on the program and often offers his insights on REUs. SMP makes a point to include colloquia on applied mathematics and the history of mathematics. Panel topics include “Making the most of your mathematics major,” “Applying, surviving and succeeding at graduate school,” and “Nonacademic careers in mathematics.” Consequently, SMP provides students with an idea of how to take their immediate next step with finesse and with a vision for what is possible in the long run for a career in mathematics.



SMP community members (spanning SMP years 1995 to 2011) at the annual summer reunion. Photo courtesy of Carleton College Summer Mathematics Program.

The four weeks at Carleton are just the beginning of a rich experience in mathematics for these young women. SMP is structured to bring together alums of the program at different stages of their education and development as mathematicians. Alums who are now in graduate school serve as teaching assistants in the program, while those with Ph.D.'s participate in SMP as speakers and panelists at the annual summer reunion conference (cleverly known as the SMPosium) or as Mathematicians in Residence (MiRs). These former SMP students serve as mentors and role models for the current students. They help current students imagine themselves several years down the road to becoming mathematicians. In this way, the program has maximum impact on its current students, while simultaneously continuing to mentor, advise, and offer opportunities to its former students. By living, working, and playing closely together, students create bonds with each other, with SMP alums, the SMP instructors, and the SMP directors. These relationships continue to foster a supportive community that former SMP participants can rely on throughout their careers. More recently, SMP added a day-long Graduate Education Mentoring workshop (GEM) during the Joint Mathematics Meetings each year for alumnae currently enrolled in Ph.D. programs. Several senior women members of the SMP community (past instructors or visitors, some of the

older Ph.D. alums) organize discussions and listen to and provide constructive critiques of talks by graduate student participants.

Karen Lange, assistant professor of mathematics at Wellesley College, views the Carleton SMP as “one of the few constant sources of support throughout my mathematical career, from my undergraduate days to the present.” She attended SMP in 1999, the summer after her freshman year of college. “At that point,” as Lange put it, “I was far from committed to a career in mathematics. I loved the course work and thrived in the enthusiastic and supportive atmosphere; I left certain I wanted to continue studying mathematics. The program opened my eyes to other resources and opportunities, which I then took advantage of throughout my college years. I cannot emphasize enough how important the SMP network, which is continually growing and being strengthened, has been to my career. After completing a Ph.D. at the University of Chicago and an NSF postdoctoral fellowship at the University of Notre Dame, I am now in a tenure-track position at Wellesley College. At conferences I regularly run into many SMP alumnae. When I am in need of any kind of advice, whether related to a job search, work-life balance, building a research program, or teaching, I have the network to turn to, and similarly, the network makes me available to support and encourage others. SMP has an incredible impact on those who have been lucky enough to be a part of it.”

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