Tennessee Hosts 10th Numerical Linear Algebra Symposium

Fairfield Glade in central Tennessee, a scenic location enhanced by the beauty of the fall foliage, was the site of the Tenth Gatlinburg Symposium on Linear Algebra. With local arrangements in the hands of Robert C. Ward and a program organized by G.W. (Pete) Stewart, the October meeting drew about 100 participants, reflecting the extent of current interest in linear algebra and matrix analysis.

The meetings in the series have been referred to as the Gatlinburgs despite the many changes in location since the four actually held in Gatlinburg. In the future, the meetings will be known as Householder Symposia, in honor of Alston S. Householder, founder of the series and organizer of the earliest meetings.

Alston Householder, David Young, and Heidi Householder

A high point of this year's meeting for many participants was the presence of Householder, who had not been able to attend other recent Gatlinburg meetings. Householder, now retired and living in Malibu, attended many of the sessions as well as a reception and dinner held in his honor at the University of Tennessee on Wednesday evening. Householder also featured prominently in the reminiscences of Richard S. Varga, speaker at the banquet held on Thursday evening.

Sven Hammarling of NAG, UK, gave an eloquent tribute to James H. Wilkinson, who died in 1986 and to whom the meeting was dedicated. Hammarling had been associated with Wilkinson for many years at the National Physical Laboratory.

The format of the Gatlinburgs has changed little since the earliest meetings. The daytime is reserved for presentations by invited speakers, with perhaps a tendency in more recent meetings to have more speakers and shorter talks. Participants generally organize evening sessions on their own during the course of the meeting. The smaller evening sessions, usually held after dinner, which itself follows a long day of invited presentations, make the Gatlinburgs technically intensive. Traditionally, there is a free afternoon, sometimes for organized activities—walking in the Tennessee countryside was a common pursuit for this year's participants, and David Young was a sought-after tennis partner.

The Householder Prize and Other Highlights

In characterizing the Gatlinburgs, many participants have attributed papers that they published subsequently to ideas that were generated during the meeting. The value of the meetings lies largely in the intensive interaction of the truly international community—about a third of the participants in this year's meeting had come from abroad.

The Gatlinburgs are principally academic conferences. A few people from industry attended, however, and there was a large contingent from various laboratories. According to Pete Stewart, "A person coming to this meeting to pick up a solution to an industrial problem would be disappointed. Solutions are forthcoming, but they tend to come in papers after the conference."

When asked what they had found most impressive about the meeting, many participants were quick to cite the presentation of Nick Higham of the University of Manchester, winner of this year's Householder prize. The prize is awarded at each Gatlinburg meeting for the outstanding thesis written during the interval (usually three years) between meetings. Higham, whose work is in classical numerical linear algebra, gave a talk entitled "A Survey of Condition Number Estimation." He is interested in a number of matrix problems, including that of finding the polar decomposition of a matrix and estimating condition numbers. His talk was preceded by the presentations of the joint winners of the last Householder prize—James Demmel of the Courant Institute of Mathematical Sciences and Ralph Byers of the University of Kansas.

Although numerical linear algebra has always been a central theme of the Gatlinburg meetings, theoretical matrix analysis has been an important companion theme. This year the blend of matrix theory and numerical problems was not so evident as in the past, principally because of the large number of meetings and journals now devoted specifically to matrix theory. Another difference from past meetings was the presence of fewer people from the core algebra area. This year's meeting was very much more oriented toward scientific computing and the use of numerical mathematics.

The number of talks on parallelism—parallel matrix computation and parallel computation—was greater than ever before. The evening sessions and many of the day sessions were influenced by the advent of parallel architectures. Shared- versus distributed-memory arguments were implicit in many of the talks and discussions.

According to Gene Wachspress, a first-time Gatlinburg participant, most of the people who attended the meeting can be divided into two groups, with some overlapping: (1) the algorithm developers, whose goal is the development of reliable, efficient, and portable general-purpose software; and (2) the more applications-oriented people, who need to solve large systems and who work with engineers and scientists to do so. Wachspress, a self-avowed member of the second group, considered the conference dominated by the first group. He cites the cross-fertilization that occurs between two such groups as one of the main benefits of such meetings: "It is more difficult to follow what someone is saying in an area that is not quite in line with what you are doing, but the potential for benefit is far greater, and it is really worth the effort. . . . I have found it very beneficial to synthesize these two areas, and, as a matter of fact, as a result of conversations with people at this conference I have had a reasonable breakthrough on a problem I've been working on."

Plans for Number 11
Four new members—Diane O'Leary,
The Fifth Quadrant

Edited by Richard Bronson and Gilbert Steiner

Competition Number 16: Below are unlikely quotes on mathematical subjects attributed either to mathematicians or to other well-known individuals. Competitors are invited to submit other atypical remarks, along with their sources.

“Just answer yes or no; I refuse to deal with uncertainty.”—William Feller

“One plus two plus three plus ... wow, you run out of fingers quickly!”—Karl Friedrich Gauss

“There are two sides to every issue.”—Möbius

Results of Competition Number 14: in which readers were asked for fanciful awards to be bestowed on famous mathematicians:

—The Mr. Clean Golden Mop for sparkling surfaces to ... Rieman
—William Toone (Baltimore, MD)
—The La Cage Aux Folles statue for most interesting transformations to ... Laplace

The Suma Wrestling Belt for bulk in mathematical exposition to ... Bourbaki
—Todd Ansler (Atlanta, GA)

—The Gypsy Rose Lee fan for exotic strips to ... Möbius
—John Santonelli (New Brunswick, NJ)

—The Gauss Elimination Prize to David Hilbert, who came face to face with his 24th unsolved problem on February 14, 1943.
—Timothy L. Hardy (Pocietello, ID)

—The People’s Choice Award for unique choices to ... Pamela Burke (Anchorage, AK)
—The Emmy or the Oscar or the Field Prize or whatever to ... Heisenberg
—John Austin (New Haven, CT)

—The Ronald Reagan Memory Medallion to ... Richard Zabiski (San Francisco, CA)
—The Jimmy the Greek commorative coin for combinatorics to ... William Feller

The advanced study institute will gather experts from numerical linear algebra, digital signal processing, and parallel processing. They will focus on the interconnections between these fields in order to spark new trends and to increase interaction. Tutorial in each of these areas, as well as state-of-the-art lectures, will be given.

For further information, contact: Danny Sorensen (Argonne National Laboratories, Argonne, IL 60439; 312-927-8711) or Paul van Dooren (Philips Research Laboratory, Av Van Belsema 2, B-1170, Brussels, Belgium; 02-747-888). Applications are due February 1, 1988.

Summer Workshop

Summer workshop(s) will be held in connection with the NATO advanced study institute at Leuven. The workshops will take place in Leuven from July 18 to August 26. The themes will be varied areas, such as numerical linear algebra, digital signal processing, parallel processing, and new trends. They will focus on the interconnections between these fields in order to spark new trends and to increase interaction. Tutorial in each of these areas, as well as state-of-the-art lectures, will be given.

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