Here is the Gatlinburg article again, as requested. The corrections you suggested have been incorporated in this version.

Nick.

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Report on Gatlinburg-9. For IMANA Newsletter.
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Last Update: 8-8-84.

The Gatlinburg-9 meeting on Numerical Linear Algebra took place at the University of Waterloo, Canada, July 9-14, 1984. The one hundred and fifty or so attendees enjoyed a wide range of invited and contributed talks, encompassing such areas as vector and parallel algorithms, least-squares computations, the Lanczos algorithm, sparse matrix techniques, control theory applications and classical matrix theory.

If the meeting had a theme it was surely the importance of vector and parallel computers and the need to develop algorithms which take advantage of these machine architectures. Most speakers made reference to the suitability of their methods for vector or parallel computers, and it was clear that many workers have access to such machines.

New to me were the Denelcor HEP, an MIMD machine in operation at Argonne National Laboratory and the ZMOB dataflow machine, installed at the University of Maryland. Algorithms for these machines were described by D.C.Sorenson and D.O'Leary respectively.

Several speakers made use in their talks of Jacobi-style algorithms for the singular value decomposition (SVD), involving computation of the SVD's of 2*2 submatrices, taken in some carefully chosen order. C.Van Loan employed this technique to derive an SVD algorithm appropriate for a systolic array architecture, while C.Paige reported on a new method which he and his collaborators have developed for computing the SVD of a product of two matrices without forming the product.

On many occasions during the meeting a group of people were to be found clustered around an IBM Personal Computer, watching (and listening!) to an enthusiastic demonstration of the "interactive matrix laboratory" MATLAB [1], by the package's author Cleve Moler. The Moler "movie" of the QR algorithm, displaying step-by-step the transformation of a random matrix to Hessenberg form, and subsequently to Real Schur form, was particularly illuminating. MATLAB is partly a teaching aid, but it became apparent that many workers are using it in their research because of its ease of use and its many powerful features.

The enthusiasm of the attendees and the genial "Gatlinburg spirit" were evident in the well-attended 8-30 P.M. lecture by W.Kahan (who provided many perspicacious comments during the meeting). This talk focussed on the benefits which can be obtained by the judicious use of extra precision arithmetic. The speaker's eloquence and humour made the meeting's longest talk seem one of the shortest.

The Thursday evening banquet culminated with the announcement of the joint winners R.Byers and J.Demmel of the Householder Prize (see the announcement elsewhere in this issue), both of whom gave well-received talks describing the thesis work for which they were awarded this coveted prize.

Jim Wilkinson spoke for all the conferees when he praised the conference chairman, Alan George, and the conference secretary, Lyn Burkowski, for their excellent organisation of what was the largest Gatlinburg meeting to date - a meeting which nevertheless retained the informality and friendliness of its predecessors.

For me the meeting was particularly exciting as it was my first opportunity to hear and to talk to many of the experts in Numerical Linear Algebra.

I very much enjoyed my first Gatlinburg meeting.

I am grateful to the University of Manchester and the Gatlinburg committee for travel support.

[1] C.B.Moler, MATLAB Users' Guide, Technical Report CS81-1 (revised), Department of Computer Science, University of New Mexico, 1982.