

Keynote Speaker



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Arithmetic Standards: The Long Road*

Abstract

This is an informal discussion of the events leading to the IEEE floating-point standards, the practical implications of those standards, and the barriers remaining to full realization of their potential.

W. J. Cody retired from Argonne National Laboratory in March 1991 after almost 32 years of service. At that time he was a Senior Mathematician in the Mathematics and Computer Science Division. He received the BS degree in mathematics from Elmhurst College, Elmhurst, Ill., in 1951; the MA degree in mathematics from the University of Oklahoma, Norman, in 1956; and an honorary ScD degree from Elmhurst in 1977.

His research interests include the approximation and evaluation of elementary and special functions, the design and evaluation of numerical software, and the interaction between computer arithmetic design and numerical algorithms. Among his contributions are the book "Software Manual for the Elementary Functions," coauthored with W. Waite, the program MACHAR for dynamically determining the characteristics of a floating-point system, and the widely used software packages ELEFUNT and CELEFUNT for testing real and complex elementary functions routines, and FUNPACK and SPECFUN containing special functions programs. The 1972 paper "A Statistical Study of the Accuracy of Floating-point Number Systems," coauthored with H. Kuki, was selected in 1983 as one of the most influential papers published in the first 25 years of CACM.

He is currently a member of IFIP Working Group 2.5 on Mathematical Software and of the ACM SIGAda Numerics Working Group now drafting Ada standards for primitive and elementary functions. He was a member of the committee that drafted ANSI/IEEE Std 754-1985 and chaired the committee that drafted ANSI/IEEE Std 854-1987. He received an IEEE Computer Society Outstanding Contribution Award in 1988 for the latter effort.

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