

# Matrix Computations & Scientific Computing Seminar

Organizer(s): James Demmel & Ming Gu

Wednesday, 11:00am–12:00pm, 380 Soda

---

Feb. 3      **Prof. W. Kahan**, UC Berkeley

*How to Compute Real Cube Roots Well*

This tutorial study of the floating-point computation of cube roots consolidates notes on some of the issues raised in courses on Numerical Analysis and Computer System Support for Scientific Computation I offered from 1960 to 1968 at the University of Toronto, Canada, and at the University of California at Berkeley from 1969 to 2008. These issues concern the quality of the infrastructure, like the Math. Library, supporting scientific and engineering computation. How can accuracy be predicted and achieved with adequate speed? How can spurious exceptions like over/underflow be avoided without undue loss of speed? How much accuracy is enough? How fast can accuracy be tested? How much can computerized proofs add to our confidence in the programs? Some answers are illustrated by MATLAB programs to compute and test cube roots.

Details are intended to be posted soon at [www.eecs.berkeley.edu/~wkahan/QBRTs.pdf](http://www.eecs.berkeley.edu/~wkahan/QBRTs.pdf)

GRADUATE STUDENTS WHO ARE INTERESTED IN SCIENTIFIC COMPUTING ARE ENCOURAGED TO ATTEND THIS TALK.