The correctness of programs for numerical computation

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ABSTRACT

Increased attention is being paid to techniques for proving the correctness of computer programs, and the problem is being approached from several different points of view. For example, those interested in systems programming have placed particular emphasis on the importance of language design and the creation of well-structured programs. Others have been interested in more formal approaches, including the use of assertions and automatic theorem proving techniques. Numerical analysts must cope with special difficulties caused by round off and truncation error, and it is the purpose of this talk to show how various techniques can be brought together to help prove the correctness of programs for numerical computation.