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**Bonita V. Saunders\*** (bonita.saunders@nist.gov), **Sean Brooks**, **Ron Buckmire** and **Rachel E. Vincent-Finley**. *Validated Computations of Special Functions I: Overview*.

During the late 1930s, 40s and 50s accurate tables of function values were calculated by human ‘computers’ to facilitate the evaluation of functions by interpolation. In addition to logarithmic and trigonometric functions, these reference tables included values for gamma, Legendre, Jacobian, Bessel, Airy, and other high level or ‘special’ functions important for applied and physical applications.

The advent of reliable computing machines, computer algebra systems, and computational packages diminished the need for such reference tables, but today’s researchers and software developers still need a way to confirm the accuracy of numerical codes that compute mathematical function values.

This talk introduces the field of validated computations of mathematical functions, which is the development of codes that compute certifiably accurate function values that can be used to test the accuracy of values produced by personal, commercial, or publicly available codes. We give a brief overview, discuss a few examples that motivate the research, and discuss how our research relates to other work in the field. (Received September 08, 2020)