COMPUTATION, MEASUREMENT, AND STANDARDS

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SUMMARY

Scientific computing is increasingly used to inform decision-making in science and engineering, commerce, and policy. However, there are indications that in some cases critical qualities of these computationsfor example, their reproducibility, and quantitative statements of accuracy and confidence in their outputs—are insufficiently characterized and understood. In this talk I will discuss research within NIST to address these challenges by presenting scientific computation as a new form of measurement. As such, it is anticipated that, in consultation with a broad cross-section of stakeholders, a uniform practice of uncertainty analysis and accuracy standards for scientific computing may be defined and promoted. Preliminary applications of these ideas in the areas of computational benchmark problems and medical device simulation will be presented as time permits.