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## Measurements of the Planck constant and the revision of the SI STEPHAN SCHLAMMINGER, National Institute of Standards and Technology

The Planck constant, h, sets the scale for quantum mechanics. The uncertainties in measuring this constant have steadily declined in the last decades. Recently, two groups have reported results with relative uncertainties below 20 parts per billion. Such a precise knowledge of h will allow us to use the Planck constant, together with the speed of light and the hyperfine structure of Cesium, to realize the unit of mass, the kilogram, at uncertainties not very different from the ones that we have from the artifact based definition. Hence, the time has come to change the definition of the unit of mass. This and other changes to our current system of units are proposed and might be implemented as early as 2018. In this talk, I will give you a brief overview of our current system of units, the proposed changes to it, and describe several experiments that measure the Planck constant. I will finally demonstrate a model of the NIST experiment to measure h constructed using Legos that can measure h with a relative uncertainty of a few percent.