



SPEAKER: Klaus von Klitzing

TITLE: **A New Kilogram in 2018: The Biggest Revolution in Metrology since the French Revolution**

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ABSTRACT

Metrology- the science of measurements- is responsible for the international uniformity and precision in standards. Today, the seven units for meter, kilogram, second, ampere, kelvin, mole, and candela of our international system of units (SI units) are used as a basis to express everything in nature by numbers and units. The first global system of units was introduced during the French Revolution with prototypes for the meter and kilogram. Even today, an artefact of platinum iridium is by definition the international unit of mass but this standard is not stable enough. Therefore, the General Conference on Weights and Measures (CGPM) at his last meeting in November 2014 encouraged the international metrology community to complete all work until July 2017 necessary for a replacement of the current SI by a new system based on constants of nature. The experimental results indicate that the values of fundamental constants are measurable with such small uncertainty, that FIXED values for 7 constants of nature will form the basis for the revised International System of Units. CODATA (Committee on Data for Science and Technology) fixed the values of these constants in a special adjustment in August 2017 and it is expected, that the next CGPM Conference (13.-16.11.2018) will confirm this recommendation.