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Quantum Hall Effect and the new SI system: The Biggest Revolution in Metrology since the French Revolution

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Nobel Prize in Physics 1985***

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Resumen

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) recommended at his last meeting in November 2018 a revised international system of units based on constants of nature with a worldwide implementation on 20.5.2019. Interestingly, this development was triggered by von Klitzing's Nobel Prize discovery of the quantum Hall.