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【15】 The revised International System of Units: A new foundation for all measures

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The International System of Units (SI) is the modern form of the metric system. It is today the authoritative basis for measurement all over the world.

The definitions of the SI base units require periodic revision in order to take scientific and technical developments into account. This is the only way in which the increasing demands on measurement accuracy can be satisfied.

Work on a fundamental revision of the SI is close to completion. This revision of the SI is expected to be concluded at the General Conference on Weights and Measures in November 2018. In the revised SI all units are defined in terms of a set of seven reference constants, to be known as the “defining constants of the SI”, namely the caesium hyperfine splitting frequency, the speed of light in vacuum, the Planck constant, the elementary charge, the Boltzmann constant, the Avogadro constant, and the luminous efficacy of a specified monochromatic source. Starting from these constants, all the units making up the system, both base units as well as derived units, can be realized with the aid of physical laws. This also applies to the unit of mass, the kilogram, which is still defined today through a physical artefact, the international prototype kilogram in Paris.

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