Updated Values for Unit Space and Unit Time

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The basis of measurement in the *Reciprocal System* of theory requires an accurate measurement of unit space and unit time.

These values were computed by Dewey B. Larson back in 1959 from the speed of light and the Rydberg frequency of hydrogen.[1]

Today, the speed of light is now considered an exact value, defining the meter as "the length of path traveled by light in vacuum in 1/299,792,458 second."[2] Therefore, the speed of light has unlimited precision, as it now defines the system of measurement.

Instead of using the Rydberg frequency of hydrogen to determine unit time, the Rydberg Constant (R_∞) can be utilized to determine unit space. This value is available to eleven significant digits.

The Rydberg Constant has units of "per meter," thus the inverse of the Rydberg Constant, the meter, can be considered the *wavelength* of space. Unit space, as defined in the Reciprocal System, consists of the half-cycle. Thus, a very accurate measurement of unit space can be found by taking the reciprocal of the Rydberg Constant (the length of a full cycle) and dividing by 2 to obtain the half cycle.

Unit time can be determined by the division of unit space by the speed of light.

Constants (1986 CODATA set, mks)

c	Speed of Light	299,792,458 m/s (exact)
R_∞	Rydberg Constant	$10,973,731.534 \pm 0.013$ m^{-1}

Unit Values Derived from Constants (cgs)

Unit Space	$4.5563352671 \times 10^{-6}$ cm
old unit space	4.558816×10^{-6} cm
Unit Time	$1.5198298508 \times 10^{-16}$ s
old unit time	1.520655×10^{-16} s

Though the difference between old and new values is approximately 0.05%, it should be noted that, "Since the 1986 adjustment, new experiments have yielded improved values for a number of constants, including the Rydberg Constant R_∞, the Planck constant h,…"[2] and because of this, these constants are only valid until the next CODATA publication.

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1 Larson, D. B., *Nothing But Motion* (North Pacific Publishers, 1979), pages 158-159.
2 *Physical Review D, Particles and Fields* (The American Physical Society, 1 August 1994), page 1233.

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