

H

H

prefix h, meaning 100 times. H with diacritics: ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? IPA-specific symbols related to H: ? ? ? ? ? ? Superscript - ?H?, or ?h?, is the eighth letter of the Latin alphabet, used in the modern English alphabet, including the alphabets of other western European languages and others worldwide. Its name in English is aitch (pronounced , plural aitches), or regionally haitch (pronounced , plural haitches).

Planck constant

The Planck constant, or Planck's constant, denoted by h , is a fundamental physical constant of foundational importance in quantum mechanics: - The Planck constant, or Planck's constant, denoted by

h

$$\{\displaystyle h\}$$

, is a fundamental physical constant of foundational importance in quantum mechanics: a photon's energy is equal to its frequency multiplied by the Planck constant, and a particle's momentum is equal to the wavenumber of the associated matter wave (the reciprocal of its wavelength) multiplied by the Planck constant.

The constant was postulated by Max Planck in 1900 as a proportionality constant needed to explain experimental black-body radiation. Planck later referred to the constant as the "quantum of action". In 1905, Albert Einstein associated the "quantum" or minimal element of the energy to the electromagnetic wave itself. Max Planck received the 1918 Nobel Prize in Physics "in recognition of the services he rendered to the advancement of Physics by his discovery of energy quanta".

In metrology, the Planck constant is used, together with other constants, to define the kilogram, the SI unit of mass. The SI units are defined such that it has the exact value

h

$$\{\displaystyle h\}$$
$$= 6.62607015 \times 10^{-34} \text{ J}\cdot\text{Hz}^{-1} \text{ when the Planck constant is expressed in SI units.}$$

The closely related reduced Planck constant, denoted

?

$\{\textstyle \hbar \}$

($\hbar$), equal to the Planck constant divided by 2π :

?

=

h

2

?

$\{\textstyle \hbar = \frac{h}{2\pi} \}$

, is commonly used in quantum physics equations. It relates the energy of a photon to its angular frequency, and the linear momentum of a particle to the angular wavenumber of its associated matter wave. As

h

$\{\displaystyle h\}$

has an exact defined value, the value of

?

$\{\textstyle \hbar \}$

can be calculated to arbitrary precision:

?

$\{\displaystyle \hbar \}$

$= 1.054571817... \times 10^{-34}$ J·s. As a proportionality constant in relationships involving angular quantities, the unit of

?

$\{\textstyle \hbar \}$

may be given as J·s/rad, with the same numerical value, as the radian is the natural dimensionless unit of angle.

Quaternion

conventionally denoted by $\mathbb{H}$ ($\mathbb{H}$ for Hamilton), or if blackboard bold is not available, by H . Quaternions are not quite - In mathematics, the quaternion number system extends the complex numbers. Quaternions were first described by the Irish mathematician William Rowan Hamilton in 1843 and applied to mechanics in three-dimensional space. The set of all quaternions is conventionally denoted by

H

$\mathbb{H}$

('H' for Hamilton), or if blackboard bold is not available, by

H . Quaternions are not quite a field, because in general, multiplication of quaternions is not commutative. Quaternions provide a definition of the quotient of two vectors in a three-dimensional space. Quaternions are generally represented in the form

a

$+$

b

i

$+$

c

j

$+$

d

k

,

$$\{ \displaystyle a+b\,\mathbf{i} +c\,\mathbf{j} +d\,\mathbf{k} \, , \}$$

where the coefficients a, b, c, d are real numbers, and 1, i, j, k are the basis vectors or basis elements.

Quaternions are used in pure mathematics, but also have practical uses in applied mathematics, particularly for calculations involving three-dimensional rotations, such as in three-dimensional computer graphics, computer vision, robotics, magnetic resonance imaging and crystallographic texture analysis. They can be used alongside other methods of rotation, such as Euler angles and rotation matrices, or as an alternative to them, depending on the application.

In modern terms, quaternions form a four-dimensional associative normed division algebra over the real numbers, and therefore a ring, also a division ring and a domain. It is a special case of a Clifford algebra, classified as

Cl

0

,

2

?

(

R

)

?

Cl

3

,

0

+

?

(

R

)

.

$$\operatorname{Cl}_{0,2}(\mathbb{R}) \cong \operatorname{Cl}_{3,0}^+(\mathbb{R}).$$

It was the first noncommutative division algebra to be discovered.

According to the Frobenius theorem, the algebra

H

$$\mathbb{H}$$

is one of only two finite-dimensional division rings containing a proper subring isomorphic to the real numbers; the other being the complex numbers. These rings are also Euclidean Hurwitz algebras, of which the quaternions are the largest associative algebra (and hence the largest ring). Further extending the quaternions yields the non-associative octonions, which is the last normed division algebra over the real numbers. The next extension gives the sedenions, which have zero divisors and so cannot be a normed division algebra.

The unit quaternions give a group structure on the 3-sphere S^3 isomorphic to the groups $\operatorname{Spin}(3)$ and $\operatorname{SU}(2)$, i.e. the universal cover group of $\operatorname{SO}(3)$. The positive and negative basis vectors form the eight-element quaternion group.

Aspirated consonant

by the aspiration modifier letter ^h, a superscript form of the symbol for the voiceless glottal fricative ʔ. For instance, ʔp represents the voiceless - In phonetics, aspiration is a strong burst of breath that accompanies either the release or, in the case of preaspiration, the closure of some obstruents. In English, aspirated consonants are allophones in complementary distribution with their unaspirated counterparts, but in some other languages, notably most South Asian languages and East Asian languages, the difference is

contrastive.

Fraktur

German-language texts. Fraktur (German: [fʁakˈtuʁ]) is a calligraphic hand of the Latin alphabet and any of several blackletter typefaces derived from this hand. It is designed such that the beginnings and ends of the individual strokes that make up each letter will be clearly visible, and often emphasized; in this way it is often contrasted with the curves of the Antiqua (common) typefaces where the letters are designed to flow and strokes connect together in a continuous fashion. The word "Fraktur" derives from Latin *fractura* ("a break"), built from *fractus*, passive participle of *frangere* ("to break"), which is also the root for the English word "fracture". In non-professional contexts, the term "Fraktur" is sometimes misused to refer to all blackletter typefaces – while Fraktur typefaces do fall under that category, not all blackletter typefaces exhibit the Fraktur characteristics described above.

Fraktur is often characterized as "the German typeface", as it remained popular in Germany and much of Eastern Europe far longer than elsewhere. Beginning in the 19th century, the use of Fraktur versus Antiqua (seen as modern) was the subject of controversy in Germany. The Antiqua–Fraktur dispute continued until 1941, when the Nazi government banned Fraktur typefaces. After Nazi Germany fell in 1945, Fraktur was unbanned, but it failed to regain widespread popularity.

Unicode subscripts and superscripts

that chemical and algebraic formulas could be written without markup. Thus "H₂O" (using a subscript 2 character) is supposed to be identical to "H²O" (with - Unicode has subscripted and superscripted versions of a number of characters including a full set of Arabic numerals. These characters allow any polynomial, chemical and certain other equations to be represented in plain text without using any form of markup like HTML or TeX.

The World Wide Web Consortium and the Unicode Consortium have made recommendations on the choice between using markup and using superscript and subscript characters:

When used in mathematical context (MathML) it is recommended to consistently use style markup for superscripts and subscripts [...] However, when super and sub-scripts are to reflect semantic distinctions, it is easier to work with these meanings encoded in text rather than markup, for example, in phonetic or phonemic transcription.

Hamiltonian mechanics

equations. Indeed, $\frac{dH}{dt} = \frac{\partial H}{\partial t} + \{H, H\} = \frac{\partial H}{\partial t}$, where $\{H, H\}$ is the Poisson bracket of H with itself. In physics, Hamiltonian mechanics is a reformulation of Lagrangian mechanics that emerged in 1833. Introduced by the Irish mathematician Sir William Rowan Hamilton, Hamiltonian mechanics replaces (generalized) velocities

q

p

i

$\{\dot{q}\}^i$

used in Lagrangian mechanics with (generalized) momenta. Both theories provide interpretations of classical mechanics and describe the same physical phenomena.

Hamiltonian mechanics has a close relationship with geometry (notably, symplectic geometry and Poisson structures) and serves as a link between classical and quantum mechanics.

Enclosed Alphanumerics

U+24Bx U+24Cx U+24Dx U+24Ex - Enclosed Alphanumerics is a Unicode block of typographical symbols of an alphanumeric within a circle, a bracket or other not-closed enclosure, or ending in a full stop.

It is currently fully allocated. Within the Basic Multilingual Plane, a few additional enclosed numerals are in the Dingbats and the Enclosed CJK Letters and Months blocks. There is also a block with more of these characters in the Supplementary Multilingual Plane named Enclosed Alphanumeric Supplement (U+1F100–U+1F1FF), as of Unicode 6.0.

Enclosed Alphanumeric Supplement

U+1F13x U+1F14x - Enclosed Alphanumeric Supplement is a Unicode block consisting of Latin alphabet characters and Arabic numerals enclosed in circles, ovals or boxes, used for a variety of purposes. It is encoded in the range U+1F100–U+1F1FF in the Supplementary Multilingual Plane.

The block is mostly an extension of the Enclosed Alphanumerics block, containing further enclosed alphanumeric characters which are not included in that block or Enclosed CJK Letters and Months. Most of the characters are single alphanumerics in boxes or circles, or with trailing commas. Two of the symbols are identified as dingbats. A number of multiple-letter enclosed abbreviations are also included, mostly to provide compatibility with Broadcast Markup Language standards (see ARIB STD B24 character set) and Japanese telecommunications networks' emoji sets. The block also includes the regional indicator symbols to be used for emoji country flag support.

H. H. Holmes

(May 16, 1861 – May 7, 1896), better known as Dr. Henry Howard Holmes or H. H. Holmes, was an American con artist and serial killer active between 1891 - Herman Webster Mudgett (May 16, 1861 – May 7, 1896), better known as Dr. Henry Howard Holmes or H. H. Holmes, was an American con artist and serial killer active between 1891 and 1894. By the time of his execution in 1896, Holmes had engaged in a lengthy criminal career that included insurance fraud, forgery, swindling, three or four bigamous marriages, horse theft, and murder. Known as the Beast of Chicago, the Devil in the White City, or the Torture Doctor, his most notorious crimes took place in Chicago around the time of the World's Columbian Exposition in 1893.

Holmes was convicted and sentenced to death for the murder of Benjamin Pitezel, his accomplice in several of his cons. However, Holmes confessed to 27 murders, including those of some people who were verifiably still alive. It is believed that he also killed three of Pitezel's children, as well as three mistresses, the child of one mistress and the sister of another. Holmes was hanged on May 7, 1896.

Much of the lore attached to Holmes concerns the so-called "Murder Castle", a three-story building he commissioned on W. 63rd Street in Chicago, Illinois. Details about the building, along with many of his alleged crimes, are considered exaggerated or fabricated for sensationalistic tabloid pieces with some accounts estimating his body count could be as high as 133 or even 200. Many of these inaccuracies have persisted due to the combination of ineffective police investigation and hyperbolic yellow journalism of the period, which are often cited as historical record.

Holmes gave various contradictory accounts of his life, initially claiming innocence, and later that he was possessed by Satan. His propensity for lying has made it difficult for researchers to ascertain the truth on the basis of his statements. For example, he claimed that Dr. Robert Leacock, a fellow medical school classmate, was one of his first murder victims, and that he killed him in 1886 for insurance money; however, Leacock died on October 5, 1889, in Watford, Ontario, Canada.

Since the 1990s, Holmes has often been described as a serial killer. In his book about Holmes, author Adam Selzer writes: "Just killing several people isn't necessarily enough for most definitions [of a serial killer]. More often, it has to be a series of similar crimes, committed over a period of time, usually more to satisfy a psychological urge on the killer's part than any more practical motive." He adds: "The murders we can connect 'Holmes' to generally had a clear motive: someone knew too much, or was getting in his way, and couldn't be trusted. The murders weren't simply for love of bloodshed but a necessary part of furthering his swindling option and protecting his lifestyle."

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