



Academic Press Dictionary of Science and Technology

Edited by
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uniform topology *Mathematics.* given a uniformity F on a topological space X , the topology whose open sets are the subsets U of X with the property that there is a set V in F such that the set $\{y : (x,y) \in V \text{ for some } x \in U\}$ is a subset of U . If a uniform topology exists for X , then X is said to be a *uniform space*.

unijunction transistor *Electronics.* a three-terminal transistor containing an emitter and two bases, and possessing negative-resistance characteristics; used mainly in switching circuits.

unilateral *Science.* of or relating to only one side.

unilateral anesthesia see HEMI-ANESTHESIA.

unilateral conductivity *Electronics.* the theoretical property of a circuit element to conduct electrical current in one direction only; in practice, even the best diode allows some reverse current to flow.

unilateral hermaphroditism *Zoology.* the presence of gonadal tissue typical of both sexes on one side, and of an ovary or testis on the other.

unilateralization *Electronics.* a technique similar to neutralization in which both the resistive and reactive components of feedback in a device are completely neutralized by external feedback to prevent undesired oscillations; the result is a device that effectively has no feedback.

unilateral surface *Mathematics.* a nonorientable two-dimensional manifold (e.g., the Möbius strip or Klein bottle) that has only one side.

unilateral tolerance method *Design Engineering.* a tolerance methodology applied to dimensioning where the tolerance is either a plus or a minus from the stated dimension; the dimension is the size or location nearest the critical condition of the material and the tolerance is either a plus or minus, whichever allows variation away from the critical point.

unilateral transducer see UNIDIRECTIONAL TRANSDUCER.

unilineal descent *Anthropology.* a practice in which one is related through a group of kin solely on the basis of one sex or the other.

unilinear cultural evolution see CULTURAL EVOLUTION.

unilugate *Botany.* of a pinnacle leaf, having only one pair of leaflets.

unimodular matrix *Mathematics.* a square matrix with determinant 1.

unimolecular *Physical Chemistry.* involving only a single molecule, rather than interaction between two separate molecules. Thus, **unimolecular reaction**.

unineme hypothesis *Molecular Biology.* a theory stating that a chromatid has only a single DNA duplex, which reaches from one end of the chromatid to the other.

uninhibited neurogenic bladder *Medicine.* a dysfunction of the bladder due to a lesion in the region of the upper motor neurons, marked by urgency and frequent involuntary voiding.

unintentional radiation exploitation *Military Science.* the operational use of non-information-bearing elements of electromagnetic energy unintentionally emanated by targets of interest.

uninterruptible power system *Electricity.* a power system that provides protection against primary power failure and variations in power-line frequency and voltage; commonly consists of a storage battery, battery charger, solid-state inverter, and solid-state switching circuit, as applied in computer systems; it may be used on-line between power line and load to provide voltage regulation and suppressed transients, or off-line and switched in only when utility power fails. Also, **uninterruptible power source** or **supply**.

union the process of uniting, or something that unites; specific uses include: *Surgery.* the process of healing; the adhesion or joining of structures or tissues, such as the edges of a wound or interfaces of a fractured bone. *Mechanical Devices.* any of a number of devices used to connect machine pipes and other parts. *Design Engineering.* a flanged or screwed pipe coupling around the outside of a joint, usually in the form of a ring fitting. *Computer Programming.* 1. the logical OR of two propositions resulting in a True value if one of the propositions is True. 2. the joining of two or more files or other objects. 3. a set union formed from two sets of data. *Mathematics.* 1. a binary set operation; denoted \cup and read "union," "join," or "cup." The union $A \cup B$ of two sets A and B is the set of all objects that are elements of at least one of A and B . 2. the union U of a collection $\{X_\alpha\}$ of sets is the set having the following properties: (a) if x is an element of X_α for some α , then x is an element of U ; and (b) if x is an element of U , then x is an element of X_α for some α . Also called a *join* or *sum*; often denoted $\cup_\alpha X_\alpha$, or similar notation. 3. the union $U = G_1 \cup G_2$ of two graphs G_1 and G_2 is a graph with $V(U) = V(G_1) \cup V(G_2)$ such that two vertices are joined by an edge in at least one G_i .

union fabric *Textiles.* a fabric made from more than one fiber type, especially fabric made with a cotton warp and a wool filling.

Unionidae *Invertebrate Zoology.* a large family of freshwater mussels, bivalve mollusks in the subclass Eulamellibranchia; the outer shell surface is rough and brown or black; the inner surface is pearly and used for buttons; larvae are fish ectoparasites.

union joint *Mechanical Devices.* a threaded-pipe coupling used to connect two threaded pipes, which allows for disconnection without the need to rotate other pipe lengths.

union of languages *Computer Science.* a language whose sentences are members of any of its component languages.

unipara *Medicine.* a female who has had one pregnancy that resulted in a viable fetus, regardless of whether the infant was alive at birth, and regardless of whether it was a single or multiple birth.

uniparental inheritance *Genetics.* a form of inheritance in which the offspring possess the phenotype of only one parent.

unipolar *Electricity.* having a single pole or polarity or direction. *Anatomy.* of a nerve cell or other structure, having but a single pole or process. *Psychology.* describing a mood disorder in which only depressive episodes occur.

Unipolarina *Invertebrate Zoology.* a suborder of parasitic sporozoan protozoans in the order Myxosporidia.

unipolar transistor *Electronics.* 1. a transistor in which the main conduction path is through P-type or N-type material, but not both, and charge carriers are of only one polarity. 2. see FIELD-EFFECT TRANSISTOR.

unipolar transmission see NEUTRAL TRANSMISSION.

unipole *Electromagnetism.* a hypothetical antenna that receives or transmits uniformly in all directions.

uniport *Biochemistry.* the transmembrane movement of one kind of solute by a carrier not linked to another solute transport across the same membrane.

unipotency *Developmental Biology.* the ability of a part to develop in one manner only. *Cell Biology.* the ability of a cell to develop into just one type of cell. Thus, **unipotent**, **unipotential**.

unipotential cathode see INDIRECTLY HEATED CATHODE.

unipotential electrostatic lens *Electronics.* an electrostatic lens having three apertures, with the same voltage difference between the central aperture and each of the outer apertures.

unique DNA *Molecular Biology.* any sequence of nucleotides in DNA that occurs only one time in a genome.

unique factorization domain *Mathematics.* an integral domain in which: (a) every nonzero nonunit element can be written as the product of a finite number of irreducible elements or factors; (b) any two such factorizations are composed of exactly the same number of factors; and (c) the factors in any factorization can be permuted so that corresponding factors are associates of one another.

unique factorization theorem *Mathematics.* a theorem stating that any positive integer can be factored in exactly one way; follows from the fact that the integers form a unique factorization domain.

uniserial *Biology.* arranged in a single row or a series of rows along only one side of an axis.

uniserrate *Biology.* having one row of serrations on a single edge.

unisexual *Biology.* having the reproductive organs and capabilities of one sex only; male or female rather than hermaphroditic.

unit *Physics.* 1. a quantity that is used and referred to as an accepted standard. 2. relating to the quantity of one. 3. any type of quantity that qualifies a physical measurement, such as a velocity measurement, which may be qualified by cm/sec, km/hr, and so on. *Engineering.* any device that can operate independently, such as a radio receiver or an oscilloscope. *Military Science.* 1. any military organization that is structured according to competent authority, especially one that is part of a larger organization. 2. the organizational title of a subdivision of a task force group. *Industrial Engineering.* see UNIT OF ISSUE. *Mathematics.* 1. the multiplicative identity of a ring, field, etc. The phrases "ring with unit" or "ring with identity" are commonly used. Also, **unit element**, **unity**. 2. an element of a ring that has both a left and right multiplicative inverse. 3. having length or norm equal to 1. For example, a **unit vector** is a vector of length one. A **unit binormal** (normal, tangent) is a unit vector in the same direction as a given binormal (resp. normal, tangent) vector. The **unit interval** is the interval (0, 1) or [0, 1]. 4. centered at the origin and having radius 1. For example, the **unit circle** and **unit n-sphere** are the circle of radius 1 and the sphere of radius 1 centered at