

## Parallel Glossary of Space and Time for Classical Physics

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**kinematics** is the set of ordered pairs of spatial and temporal position, called *location* and *chronation*. **event** is a physical occurrence with location and chronation. **body** is a physical entity with spatial and temporal extent and position. **observer** is a body capable of measurement. **motion of a body** is a continuous change of its position relative to an observer. **frame of reference** (frame) is a physical system that enables every event to be assigned a unique position. **elapsed** indicates a measure of independent uniform motion. **traversed** indicates a measure of dependent motion.

<i>Space Terms</i>	<i>Time Terms</i>
<b>space frame</b> is a frame at rest relative to an observer. <b>space pointer</b> is the position of the time frame origin relative to the space frame. <b>space pointer device</b> is a device that indicates the space pointer position.	<b>time frame</b> is a frame in standard uniform motion relative to an observer. <b>time pointer</b> is the position of the space frame origin relative to the time frame. <b>time pointer device</b> is a device that indicates the time pointer position.
<b>space</b> (3D space) is the $\mathbf{R}^3$ geometry of a space frame. <b>place point</b> is a point in space. <b>location</b> of a place point is its coordinates relative to the space origin and axes; symbol $\mathbf{x}$ . <b>placepoint</b> events occur in a place point.	<b>trime</b> (3D time) is the $\mathbf{R}^3$ geometry of a time frame. <b>time point</b> is a point in trime. <b>chronation</b> of a time point is its coordinates relative to the time origin and axes; symbol $\mathbf{t}$ . <b>instantaneous</b> (timepoint) events occur in a time point.
<b>length</b> is the extent of motion of a body relative to a space frame. <b>odometer</b> device displays the current local length of motion. <b>angle</b> ( $\theta, \phi$ ) is a proportion of a circle between two rays intersecting in a place point. <b>angle direction</b> is the angle from a reference ray.	<b>duration</b> is the extent of motion of a body relative to a time frame. <b>stopwatch</b> displays the current local duration of motion. <b>turn angle</b> ( $\chi, \psi$ ) is a proportion of a revolution between two rays intersecting in a time point. <b>turn direction</b> is the turn angle from a reference ray.
<b>displacement</b> is a space vector; or the distance and angle direction between two place points. <b>distance</b> is (1) the linear (or shortest) length between two place points; (2) the magnitude of a displacement vector.	<b>dischronment</b> is a <i>trime</i> vector; or the distime and turn direction between two trime points. <b>distime</b> (time interval) is (1) the distance between two points on a time frame; or (2) the magnitude of a dischronment vector.
<b>scalar space</b> (stance) is the interval of space marked by the space pointer. <b>placeline</b> is a series of scalar spaces. <b>simulstanceous</b> events occur at the same stance; n. <i>simulstanceity</i> . <b>synstanceous</b> events have the same stances; vb. <i>synstancize, make synstanceous</i> . <b>syntopic</b> events are in the same place at different times.	<b>scalar time</b> (time) is the interval of time marked by the time pointer. <b>timeline</b> is a series of scalar times. <b>simultaneous</b> events occur at the same timeline point; n. <i>simultaneity</i> . <b>synchronous</b> , have the same timeline points; vb. <i>synchronize, make synchronous</i> . <b>synchronic</b> events are at the same time in different places.
<b>speed</b> : <i>time speed</i> of a motion is the distance traversed per unit of distime elapsed (running time) without regard to direction; <i>space speed</i> (or spot speed) of a motion is the (short) distance traversed per unit of distime elapsed at a location; <i>instantaneous speed</i> is $dx/dt =  d\mathbf{x}/dt $ ; symbol $v$ ; units of m/s, km/hr, etc.	<b>pace</b> : <i>space pace</i> of a motion is the distime traversed per unit of distance elapsed (running length) without regard to direction; <i>time pace</i> (moment pace) of a motion is the (short) distime traversed per unit of distance elapsed at a chronation; <i>placepoint pace</i> is $dt/dx =  d\mathbf{t}/d\mathbf{x} $ ; the term <i>pace</i> is from racing; symbol $u$ ; units of s/m, min/km, etc.
<b>velocity</b> : $\Delta\mathbf{x}/\Delta t$ (1a) <i>time velocity</i> of a motion is the displacement traversed per unit of distime elapsed (running time); (1b) <i>space velocity</i> (spot velocity) of a motion is the displacement traversed per unit of distime elapsed at a place in space; (2) <i>instantaneous velocity</i> is $d\mathbf{x}/dt$ ; symbol $\mathbf{v}$ ; Latin <i>velocitas</i> , swiftness, rapidity.	<b>lenticity</b> (len·tis'·i·ty): $\Delta\mathbf{t}/\Delta s$ (1a) <i>space lenticity</i> of a motion is the dischronment traversed per unit of distance elapsed (running length); (1b) <i>time lenticity</i> (moment velocity) of a motion is the dischronment traversed per unit of distance elapsed at a moment in time; (2) <i>placepoint lenticity</i> is $d\mathbf{t}/d\mathbf{x}$ ; symbol $\mathbf{w}$ ; Latin <i>lentus</i> , slow, sluggish.
<b>acceleration</b> is the change in the <i>displacement</i> per unit of distime; verb is <i>accelerate</i> with negative <i>decelerate</i> ; zero acceleration is <i>unaccelerated</i> ; <i>instantaneous acceleration</i> is $d\mathbf{v}/dt = d\mathbf{v}/ d\mathbf{t} $ ; units of $m/s^2$ ; symbol $\mathbf{a}$ .	<b>retardation</b> is the change in the <i>dischronment</i> per unit of distance; verb is <i>retard</i> with negative <i>de-retard</i> (or expedite); zero retardation is <i>unretarded</i> ; <i>placepoint retardation</i> $d\mathbf{w}/d\mathbf{x} = d\mathbf{w}/ d\mathbf{x} $ ; units $s/m^2$ ; symbol $\mathbf{b}$ .

<p><b>circular motion:</b> space circle <math>S = \text{wavelength } \lambda = v/f</math>; circular arc <math>s</math>; space radius <math>R</math>; (spatial) angle <math>\theta = s/R</math>; frequency <math>f = 1/T = v/\lambda</math>; angular velocity <math>v = S/T = \lambda f</math>; if <math>S = 1</math>, then <math>v = f</math>; if <math>R = 1</math>, then <math>v = \omega = 2\pi f = \theta/t</math>.</p>	<p><b>cyclic motion:</b> time period <math>T = \text{wave duration } \mu = u/h</math>; rotation time <math>t</math>; time radius <math>Q</math>; turn angle <math>\phi = t/Q</math>; periodicity <math>h = 1/S = u/\mu</math>; angular lenticity <math>u = T/S = \mu h</math>; if <math>T = 1</math>, then <math>u = h</math>; if <math>Q = 1</math>, then <math>u = \kappa = 2\pi h = \theta/s</math>.</p>
<p><b>travel distance</b> (arc length) is the length along a curve. <b>distance scale</b> is a ratio of map distance <i>vs</i> actual distance. <b>isodistance line</b> shows <i>equidistant</i> events.</p>	<p><b>travel time</b> (arc duration) is the duration along a curve. <b>distime scale</b> is a ratio of map distime interval <i>vs</i> actual distime interval. <b>isochron line</b> shows <i>equidistimed</i> events.</p>
<p><b>time mean speed</b> is the arithmetic mean of speeds with a common time unit. <b>space mean speed</b> is the harmonic mean of speeds with a common distance unit.</p>	<p><b>space mean pace</b> is the arithmetic mean of paces with a common length unit. <b>time mean pace</b> is the harmonic mean of paces with a common distime unit.</p>
<p><b>inertia</b> (linear) is the resistance of a body to any change in its state of motion. <b>inertial system</b> has bodies at rest or moving with uniform velocity.</p>	<p><b>facilia</b> (linear) is the nonresistance of a body to a change in its state of movement; Latin for <i>easy</i>. <b>facialial system</b> has bodies at rest or moving with uniform lenticity.</p>
<p><b>mass</b> is the resistance of a body to a change in its condition of motion as a net force is applied; inverse of <i>elaphrance</i>; units of kg; symbol <math>m</math>.</p>	<p><b>elaphrance</b> is the nonresistance of a body to a change in its condition of movement as a net <i>release</i> is applied; inverse of mass; from <i>elaphr + ance</i>; units of <math>\text{kg}^{-1}</math>; symbol <math>n</math>.</p>
<p><b>matter</b> (particle) is a body with <i>mass</i> that occupies a space; a measure of the energy content of a body.</p>	<p><b>carrier</b> (wave) is a body with <i>elaphrance</i> that fills a <i>trime</i>; a measure of the lethargy content of a body.</p>
<p><b>moment</b> is the product of a physical quantity such as mass or force and its distance from/to a place point/axis.</p>	<p><b>fulment</b> is the product of a physical quantity such as <i>elaphrance</i> or <i>release</i> and its distime from/to a time point.</p>
<p><b>momentum</b> (linear) is the <i>mass</i> times the <i>velocity</i>; the time rate of change of the mass-distance moment; Latin, movement; units in <math>\text{kg m s}^{-1}</math>; symbol <math>\mathbf{p} = m\mathbf{v}</math>.</p>	<p><b>fulmentum</b> (ful-men'-tum) is the <i>elaphrance</i> times the <i>lenticity</i>; the space rate of change of the elaphrance-distime fulment; Latin, prop; units of <math>\text{kg}^{-1} \text{s m}^{-1}</math>; symbol <math>\mathbf{q} = n\mathbf{u}</math>.</p>
<p><b>force</b> is the time rate of change of <i>momentum</i>; units in newtons, <math>\text{N} = \text{kg m s}^{-2}</math>; symbol <math>\mathbf{F} \equiv d\mathbf{p}/dt</math>, e.g., <i>ma</i>.</p>	<p><b>release</b> is the space rate of change of <i>fulmentum</i>; units in <i>oldtons</i>, <math>\text{O} = \text{kg}^{-1} \text{s m}^{-2}</math>; symbol <math>\mathbf{R} \equiv d\mathbf{q}/dx</math>, e.g., <i>nb</i>.</p>
<p><b>impulse</b> is a force <math>\mathbf{F}</math> applied over a distime <math>dt</math>, or the change in momentum; units <math>\text{N}\cdot\text{s}</math>; symbol <math>\mathbf{J} \equiv \mathbf{F}\cdot dt = d\mathbf{p}</math>. <b>work</b> is a force <math>\mathbf{F}</math> applied over a displacement <math>\mathbf{x}</math>: <math>W \equiv \mathbf{F}\cdot\mathbf{x}</math>; for a constant force: <math>W = F dx = P dt</math>; units: <math>\text{J} = \text{N}\cdot\text{m}</math>.</p>	<p><b>drawing</b> is a <i>release</i> <math>\mathbf{G}</math> applied over a distance <math>dx</math> or change in <i>fulmentum</i>; units <math>\text{O}\cdot\text{m}</math>; symbol <math>\mathbf{K} \equiv \mathbf{R}\cdot dx = d\mathbf{q}</math>. <b>repose</b> (inverse of work) is a <i>release</i> <math>\mathbf{R}</math> applied over a <i>dischronment</i> <math>\mathbf{t}</math>: <math>X \equiv \mathbf{R}\cdot\mathbf{t}</math>; for a constant <i>release</i>: <math>Y = R dt = Z dx</math>; units <math>\text{O}\cdot\text{s}</math>.</p>
<p><b>power</b> is the ratio of work per unit of distime: <math>P \equiv dW/dt = \mathbf{F}\cdot\mathbf{v}</math>; units: Watt, <math>\text{W} = \text{J/s} = \text{N}\cdot\text{m/s}</math>.</p>	<p><b>placidity</b> is the ratio of repose per unit of distance: <math>Z \equiv dV/dx = \mathbf{R}\cdot\mathbf{u}</math>; units: <math>1/\text{J}\cdot\text{m} = \text{O}\cdot\text{s/m}</math>.</p>
<p><b>energy</b> is the capacity for doing work; units, <math>\text{J} \equiv \text{N}\cdot\text{m} = \text{W}\cdot\text{s}</math>; symbol <math>E</math>. <b>kinetic energy</b> <math>\text{KE} = \frac{1}{2} m\mathbf{v}^2</math>.</p>	<p><b>lethargy</b> is the capacity for repose; units, <math>1/\text{J} \equiv \text{O}\cdot\text{s}</math>; symbol <math>D = 1/E</math>. <b>kinetic lethargy</b> <math>\text{KL} = \frac{1}{2} n\mathbf{u}^2</math>.</p>
<p><b>center of mass</b> (or <i>bathycenter</i>) is the normalized moment of mass; <math>\mathbf{R} = (1/M) \sum_i \mathbf{r}_i m_i</math>. <b>moment of inertia</b> is the second moment of mass; <math>I \equiv \sum_i r_i^2 m_i</math>.</p>	<p><b>center of elaphrance</b> (or <i>elaphrocenter</i>) is the normalized fulment of elaphrance; <math>\mathbf{T} = (1/N) \sum_i \mathbf{t}_i n_i</math>. <b>fulment of facilia</b> is the second fulment of elaphrance; <math>J \equiv \sum_i t_i^2 n_i</math>.</p>
<p><b>gravitation</b> is the mutual force that all bodies have, which is directed toward the mutual center of mass. <b>weight</b> is the force exerted on a body by gravity.</p>	<p><b>levitation</b> is the mutual <i>release</i> that all bodies have, which is directed toward the mutual center of <i>elaphrance</i>. <b>elaphra</b> is the <i>release</i> exerted on a body by <i>levity</i>.</p>
<p><b>angular momentum</b> for a particle place point is the moment of momentum, <math>\mathbf{L} \equiv \mathbf{r} \times \mathbf{p}</math>, the cross product of the particle's location vector, <math>\mathbf{r}</math>, and its momentum vector, <math>\mathbf{p} = m\mathbf{v}</math>.</p>	<p><b>angular fulmentum</b> for a particle time point is the fulment of fulmentum, <math>\mathbf{\Gamma} \equiv \mathbf{t} \times \mathbf{q}</math>, the cross product of the particle's <i>chronation</i> vector, <math>\mathbf{t}</math>, and its <i>fulmentum</i> vector, <math>\mathbf{q} = n\mathbf{u}</math>.</p>
<p><b>torque</b> is the moment of force; the rate of change of angular momentum of a body, <math>\boldsymbol{\tau} = \mathbf{I}\boldsymbol{\alpha}</math>; units: <math>\text{N}\cdot\text{m}</math>.</p>	<p><b>strophence</b> is the fulment of release; the rate of change of angular <i>fulmentum</i> of a body, <math>\boldsymbol{\sigma} = \mathbf{I}\boldsymbol{\beta}</math>; from Greek <i>strophe</i>, turn + (e)<i>n</i>ce.</p>

