

Parallel Glossary for Classical Physics

RA Gillmann, 2023-12-15

kinecosc is the six-dimensional world of motion measured by length and duration. **position** is a reference to a point of the kinecosc, $\mathbb{R}^3 \times \mathbb{R}^3$; an ordered pair of the location and chronation of the same event. **motion** is a continuous change of a body's position. **direction** is a position toward which a body moves. **dynacosm** is the six-dimensional world of weighted motion measured by length with time and mass along with duration with elapsed distance and vass. **body** is a continuous set of point masses or vasses. **length-duration domain** is the domain with length and duration independent (time and elapsed distance can be secondary independent variables).

clock-rod is a measuring device with two adjacent rods in relative uniform motion at the elapse rate; marks are at regular intervals on each rod. **event** (eventicle) is an occurrence; specifically, a point in a frame of reference. **event space** is length and duration space. **frame of reference** is a method to project every event onto a coordinate system.

Inertial Frame

Facilial Frame

length frame is a 3D lattice of clock-rods as an \mathbb{R}^3 coordinate system with each length rod at rest relative to an observer relative to a duration rod position. **length** (traversal length) is the interval between two points on a length frame traversed by a point on its duration frame. **inertia** is the resistance of a body to any change in its state of motion. **inertial frame** is a length frame in which free particles have no acceleration.

duration frame is a 3D lattice of clock-rods as an \mathbb{R}^3 coordinate system with each duration rod at rest relative to an observer relative to a length rod position. **duration** (traversal duration) is the interval between two points on a duration frame traversed by a point on its length frame. **facilia** is the nonresistance of a body to a change in its state of motion; Latin for *easy*. **facilial frame** is a duration frame in which free particles have no relementation.

length space is the 3D vector space of a length frame. **displacement** is a vector between points in length space. **location vector** is the displacement from the length space origin; symbol \mathbf{x} . **distance** is the magnitude of a displacement.

duration space is the 3D vector space of a duration frame. **dischrogment** is a vector between points in duration space. **chronation vector** is the dischrogment from the duration space origin; symbol \mathbf{z} (cf German *Zeit*). **distime** is the magnitude of a dischrogment.

elapsed distance is an independent length, e.g., the magnitude of an independent displacement; symbol r . **distance domain** is elapsed distance and duration space. **differential distance** $(dr)^2 = (dx_1)^2 + (dx_2)^2 + (dx_3)^2$. **arc length** is the length along a curve in length space.

elapsed time is an independent duration, e.g., the magnitude of an independent dischrogment; symbol t . **time domain** is elapsed time and length space, $\mathbb{R}^3 \times \mathbb{R}$. **differential time** $(dt)^2 = (dz_1)^2 + (dz_2)^2 + (dz_3)^2$. **arc duration** is the duration along a curve in duration space.

punctaneous event occurs in a single elapsed distance point. **simuldistant** events occur at the same elapsed distance; n *simuldistanceity*. **diatopic** events occur through the elapsed distance domain. **diatopology** is the order of events over elapsed distance.

instantaneous event occurs in a single elapsed time point. **simultaneous** events occur at the same elapsed time; n *simultaneity*. **diachronic** events occur through the elapsed time domain. **chronology** is the order of events over elapsed time.

speed of a body is the elapsed time rate of displacement magnitude, $\Delta x/\Delta t$; *instantaneous speed* is the magnitude of the instantaneous velocity, $|dx/dt|$; symbol v ; units of m/s, etc. **harmonic speed** is the reciprocal of pace, which adds harmonically.

pace of a body is the elapsed distance rate of dischrogment magnitude, $\Delta z/\Delta r$; *punctaneous pace* is the magnitude of the instantaneous lenticity, $|dz/dr|$; symbol w ; units of s/m; from racing (cf *ritmo*). **harmonic pace** is the reciprocal of speed, which adds harmonically.

velocity is the elapsed time rate of displacement, $\Delta \mathbf{x}/\Delta t$; *instantaneous velocity* is the derivative of the length trajectory with respect to elapsed time, $d\mathbf{x}/dt$; symbol \mathbf{v} ; from Latin *velocitas*, rapidity. **harmonic velocity** is the reciprocal of lenticity, which adds harmonically.

lenticity is the elapsed distance rate of dischrogment, $\Delta \mathbf{z}/\Delta r$; *punctaneous lenticity* is the derivative of the duration trajectory with respect to elapsed distance, $d\mathbf{z}/dr$; symbol \mathbf{w} ; from Latin *lentus*, slow. **harmonic lenticity** is the reciprocal of velocity, which adds harmonically.

acceleration is the elapsed time rate of velocity variation; verb *accelerate*; negative is *decelerate*; zero is *unaccelerated*; *instantaneous acceleration* is the derivative of velocity with respect to elapsed time, $d\mathbf{v}/dt$; symbol \mathbf{a} ; units of m/s^2 .

relementation is the elapsed distance rate of lenticity variation; verb *relementate*; negative is *derelementate*; zero is *unrelementated*; *punctaneous relementation* is the derivative of lenticity with respect to elapsed distance, $d\mathbf{w}/dr$; symbol \mathbf{b} ; units s/m^2 ; S_p .

<p>arithmetic addition is scalar or vector addition; symbol +, for adding rates with a common denominator.</p> <p>equidistant events are an equal distance apart or an equal distance from a common point; vb. <i>equidistance</i>, to make <i>equidistant</i>.</p>	<p>harmonic addition (or reciprocal or parallel addition) is the reciprocal of the addend reciprocals; symbol \boxplus, for adding rates with a common numerator. synchronous events are an equal time apart or an equal time from a common event; vb. <i>synchronise</i>, to make synchronous.</p>
<p>isodistance (contour) line links <i>equidistant</i> events.</p> <p>length scale (or distance scale) is a ratio of map length vs actual length. synchronic is a wide-angle snapshot.</p>	<p>isochron (contour) line links <i>simultaneous</i> events. time scale (or duration scale) is a ratio of map duration vs actual duration. diachronic is a bit of length space through time.</p>
<p>circular motion: circumference $S = \text{wavelength } \lambda = 1/h = v/f$; circular arc s; length radius R; length angle $\theta = x/R$; frequency $f = 1/T = v/\lambda$; angular velocity $v = S/T = \lambda f$; if $S = 1$, then $v = f$; if $R = 1$, then $v = \omega = 2\pi f = \theta/t$.</p> <p>phase ϕ is displacement at an initial or elapsed time.</p>	<p>cyclic motion: period $T = \text{wavetime } \mu = 1/f = w/h$; rotation duration t; duration radius Q; duration (turn) angle $\psi = z/Q$; periodicity $h = 1/S = w/\mu$; angular lenticity $w = T/S = \mu h$; if $T = 1$, then $w = h$; if $Q = 1$, then $w = \kappa = 2\pi h = \theta/s$. posture χ is dischronment at an initial or elapsed distance.</p>
<p>mass is a measure of a body's inertia; the resistance of a body to a change in its condition of motion as a net force is applied; inverse of <i>vass</i>; units of kg; symbol m.</p> <p>matter is a body with mass and 3D length; a measure of the energy content of a body. point mass (or particle) is a weighted length with elapsed time point.</p>	<p>vass measures a body's facilia; nonresistance of a body to a change in its condition of motion as a net <i>release</i> is applied; inverse of mass; from <i>inverse mass</i>; units of kg^{-1}; symbol n.</p> <p>patter is a body with <i>vass</i> and 3D duration; a measure of the lethargy content of a body. point vass (or tempicle) is a weighted duration with elapsed distance point.</p>
<p>moment is the product of a physical quantity such as mass or force and its distance from/to a space point/axis.</p> <p>momentum (linear) is the <i>mass</i> times the <i>velocity</i>; the time rate of change of the mass-distance moment; plural, <i>momenta</i>; units in kg m s^{-1}; symbol $\mathbf{p} = mv$.</p>	<p>punctum is the product of a physical quantity such as <i>vass</i> or <i>release</i> and its time from/to a time point. levamentum is the inverse momentum, <i>vass</i> times the <i>lenticity</i>; the distance rate of change of the vass-time punctum; plural, <i>puncta</i>; Latin, point; units of $\text{kg}^{-1} \text{s m}^{-1}$; symbol $\mathbf{q} = nw$.</p>
<p>force is the agency that tends to change the momentum of a body; elapsed time rate of change of <i>momentum</i>; units in newtons, $\text{N} = \text{kg m s}^{-2}$; symbol $\mathbf{F} \equiv d\mathbf{p}/dt$.</p>	<p>release is the agency that tends to change the levamentum of a body; elapsed distance rate of change of <i>levamentum</i>; units in <i>oldtons</i>, $\text{O} = \text{kg}^{-1} \text{s m}^{-2}$; symbol $\mathbf{R} \equiv d\mathbf{q}/ds$.</p>
<p>impulse is a force \mathbf{F} applied over an elapsed time dt, or the change in momentum; units $\text{N}\cdot\text{s}$; symbol $\mathbf{J} \equiv \mathbf{F}\cdot dt = d\mathbf{p}$. work is a force \mathbf{F} applied over a displacement \mathbf{x}: $W \equiv \mathbf{F}\cdot \mathbf{x}$; constant force: $W = F dx = P dt$; units: $J = \text{N}\cdot\text{m}$.</p>	<p>remove is a <i>release</i> \mathbf{G} applied over an elapsed distance dx or change in <i>levamentum</i>; units $\text{O}\cdot\text{m}$; symbol $\mathbf{K} \equiv \mathbf{R}\cdot dr = d\mathbf{h}$. repose is a release $\mathbf{R} = \mathbf{F}^{-1}$ applied over a <i>dischronment</i> z: $Z \equiv \mathbf{R}\cdot z$; constant <i>release</i>: $Y = R dw = Q ds$; units $\text{O}\cdot\text{s}$.</p>
<p>power is the elapsed time rate of work done: $P \equiv dW/dt = \mathbf{F}\cdot \mathbf{v}$; units: Watt, $\text{W} = \text{J/s} = \text{N}\cdot\text{m/s}$. energy: the capacity for doing work; units, $J \equiv \text{N}\cdot\text{m} = \text{W}\cdot\text{s}$; symbol E; energy is conserved over elapsed time. kinetic energy $KE = \frac{1}{2}mv^2$.</p>	<p>placidity is the elapsed distance rate of repose effected: $Q \equiv dV/dr = \mathbf{R}\cdot \mathbf{u}$; units: $1/J\cdot\text{m} = \text{O}\cdot\text{s/m}$. lethargy is the capacity for repose; units, $1/J \equiv \text{O}\cdot\text{s}$; symbol $D = 1/E$; lethargy is conserved over elapsed distance. kinetic lethargy $KL = \frac{1}{2}nw^2$.</p>
<p>centre of mass (or <i>barycentre</i>) is the normalized moment of mass; $\mathbf{M} = \sum_i \mathbf{x}_i m_i / \sum_i m_i$. moment of inertia is the second moment of mass; $I \equiv \sum_i x_i^2 m_i$.</p>	<p>centre of vass (or <i>elaphrocentre</i>) is the normalized punctum of vass; $\mathbf{N} = \sum_i \mathbf{z}_i n_i / \sum_i n_i$. punctum of facilia is the second punctum of vass; $J \equiv \sum_i z_i^2 n_i$.</p>
<p>gravitation is the mutual force that all bodies have, which is directed toward their mutual centre of mass.</p> <p>weight is the force exerted on a body by gravity.</p>	<p>levitation is the mutual <i>release</i> that all bodies have, which is directed toward their mutual centre of <i>vass</i>. levage is the <i>release</i> exerted on a body by <i>levity</i> (from French).</p>
<p>angular momentum for a length space particle is the moment of momentum, $\mathbf{L} \equiv \mathbf{x} \times \mathbf{p}$, the cross product of the particle's location vector, \mathbf{x}, and its momentum vector, $\mathbf{p} = mv$. torque is the moment of force; the rate of change of angular momentum, $\boldsymbol{\tau} = I\boldsymbol{\alpha} = \mathbf{x} \wedge \mathbf{F}$; units: $\text{N}\cdot\text{m}$.</p>	<p>angular levamentum for a duration space tempicle is the punctum of levamentum, $\boldsymbol{\Gamma} \equiv \mathbf{t} \times \mathbf{h}$, the cross product of the tempicle's <i>chronation</i> vector, \mathbf{z}, and its <i>levamentum</i> vector, $\mathbf{h} = nw$. strophence is the punctum of release; the rate of change of angular <i>levamentum</i>, $\boldsymbol{\sigma} = I\boldsymbol{\beta} = \mathbf{z} \wedge \mathbf{R}$; from Greek <i>strophe</i>, turn + (e)nce.</p>