Displacement: the difference between the final and initial position of a point es...

CHAPTER 11:

DISPLACEMENT:

the difference between the final and initial position of a point (for instance, the center of mass of a moving object). The actual path covered to reach the final position is irrelevant. It can simply be defined as the shortest distance between the final point and initial point of a body. * Particle displacement, a measurement of distance of the movement of a particle in a medium as it transmits a wave (represented in mathematics by the lower-case Greek letter ξ)

DISTANCE:

In physics or everyday discussion, distance may refer to a physical length, or an estimation based on other criteria (e. g. “ two counties over”). In mathematics, a distance function or metric is a generalization of the concept of physical distance. A metric is a function that behaves according to a specific set of rules, and is a concrete way of describing what it means for elements of some space to be “ close to” or “ far away from” each other. In most cases, “ distance from A to B” is interchangeable with “ distance between B and A”.

CHAPTER 12:

SPEED:

In kinematics, the speed of an object is the magnitude of its velocity (the rate of change of its position); it is thus a scalar quantity. Theaverage speed of an object in an interval of time is the distance travelled by the object divided by the duration of the interval;[1] the instantaneous speed is the

limit of the average speed as the duration of the time interval approaches zero. Like velocity, speed has the dimensions of a length divided by a time; the SI unit of speed is the metre per second, but the most usual unit of speed in everyday usage is the kilometre per hour or, in the USA and the UK, miles per hour. For air and marine travel the knotis commonly used.

ACCELERATION:

Acceleration due to gravity may refer to:

* Gravitational acceleration, the acceleration caused by the gravitational attraction of massive bodies in general * Gravity of Earth, the acceleration caused by the gravitational attraction of the Earth * Standard gravity, or g, the standard value of gravitational acceleration at sea level on Earth

CHAPTER 13:

POTENTIAL ENERGY:

The term “ potential energy” was coined by the 19th century Scottish engineer and physicist William Rankine,[2][3] although it has links to Greek philosopher Aristotle’s concept of potentiality. Potential energy is associated with a set of forces that act on a body in a way that depends only on the body’s position in space. This allows the set of forces to be considered as having a specified vector at every point in space forming what is known as a vector field of forces, or a force field. If the work of forces of this type acting on a body that moves from a start to an end position is defined only by these two positions and does not depend on the trajectory of the body between the two, then there is a function known as a potential that can be evaluated at

the two positions to determine this work. Furthermore, the force field is defined by this potential function, also called potential energy.

KINETIC ENERGY:

The kinetic energy of an object is the energy which it possesses due to its motion.[1] It is defined as the work needed to accelerate a body of a given mass from rest to its stated velocity. Having gained this energy during its acceleration, the body maintains this kinetic energy unless its speed changes. The same amount of work is done by the body in decelerating from its current speed to a state of rest.

CHAPTER 14:

FLOATING AND FLYING:

The idea of floating-point representation over intrinsically integer fixed-point numbers, which consist purely of significand, is that expanding it with the exponent component achieves the greater range. For instance, to represent large values, e. g. distances between galaxies, there is no need to keep all 39 decimal places down to femtometre-resolution, employed in particle physics. Assuming that the best resolution is in light years, only 9 most significant decimal digits matter whereas 30 others bear pure noise and, thus, can be safely dropped. The example also explains that using scaling to extend the dynamic range results in another contrast with usual fixed-point numbers: their values are not uniformly spaced.

BOUYANCY:

In physics, buoyancy (pron.: /ˈbɔɪ. ənsi/) is an upward force exerted by a

fluid, that opposes the weight of an immersed object. In a column of fluid, pressure increases with depth as a result of the weight of the overlying fluid. Thus a column of fluid, or an object submerged in the fluid, experiences greater pressure at the bottom of the column than at the top. This difference in pressure results in a net force that tends to accelerate an object upwards. The magnitude of that force is proportional to the difference in the pressure between the top and the bottom of the column, and (as explained by Archimedes’ principle) is also equivalent to the weight of the fluid that would otherwise occupy the column, i. e. the displaced fluid.