Momentum

Robert William Whitby
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http://web.me.com/whitby

http://web.me.com/whitby/Octahedron/Welcome.html

Reference

Octahedron1stEd.pdf

Introduction

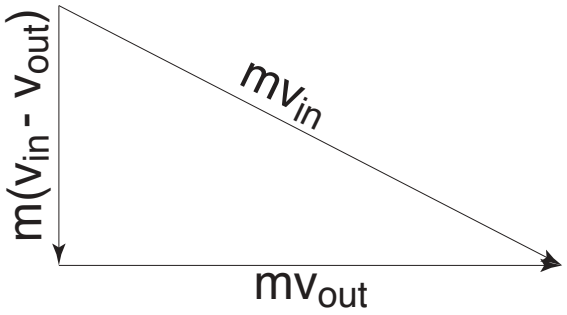
This material has been excerpted from *Octahedron*.

MOMENTUM

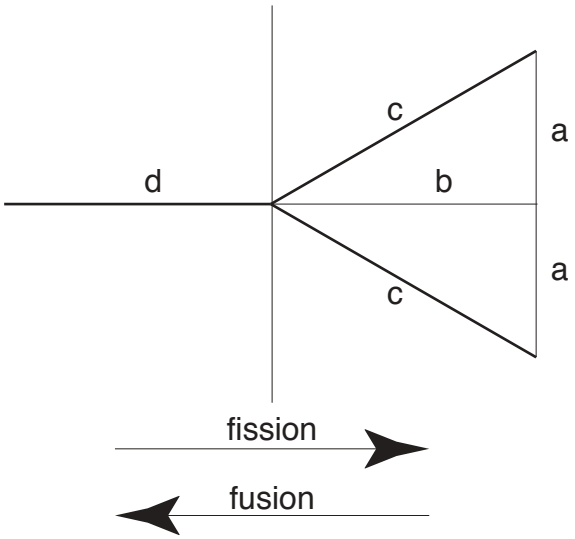
Energy

Kinetic energy

Energy has been treated as if it was a substance or independent entity. But, for a moving particle, it is no more than a condition imposed upon the transfer of momentum. The condition is that for any loss of momentum that the particle undergoes in a collision, the vectors representing the velocity of the particle going into the collision, the velocity after the collision, and the change in velocity as a result of the collision will be as the sides of a right triangle.



Momentum exchange: collision
Condition required for "energy" conservation.



Momentum exchange: Fission vs. fusion
Vector diagram showing relationship between *fission* and *fusion* for the crystalline octahedral atom.

The line segments labeled **d** or **c** are velocity vectors. Vector **d** and the two vectors labeled **c** each represent the velocity of a single particle. The vectors labeled **a** or **b** are the components of the velocity vectors labeled **c**. Vectors **b** and **d** are equal in length.

In a *fission* event where a particle with velocity **d** splits into two identical particles, each of the pieces continues with a velocity **c** which is equal to the vector sum of velocity **d**, the original velocity, and velocity **a**, the velocity acquired by their mutual repulsion. In a *fusion* event, each of the joining particles loses the component of its velocity represented by the vector **a**, and the joined pair proceed with the velocity **d** which is equal to the component of the velocity that each had in the direction of vector **d**, which is vector **b**.

Fission and Fusion

The crystalline atom is built by the association of identical epns in identical orientation. The epns are held together by the attraction between their congruent edgial poles. The periodicity of the elements indicates that the epns form triplets, and these triplets then join one by one to form the successive growth stages of an atom which are the elements. The crystalline addition of the triplets is best effected when the relative motion between the parts approaches zero. This is best effected when the parts are isolated from other atoms. The joining will always require a relative velocity of joining, and this velocity will be lost when the two are joined. The growth of atoms necessarily entails a reduction in the number of thermal entities and the loss of the momentum which existed between their parts. The crystalline form of the parts is not altered by their joining, nor are they rearranged. The join is one of addition. The term "fusion" is associated with melting and is contrary in sense to the crystalline addition of parts.

The maximum attraction or repulsion that can exist between a pair of epn edges is that of congruent contact where the respective epns are in identical orientation. The most attractive association is separated from the most repul-

sive association by a simple rotation of one of the epns relative to the other so as to replace the attractive edge with one of opposite polarity.

e/m

The value of e/m is a constant for each and every kind of atom, because whatever the polar effects, mass, magnetic, momentum, frequency, energy, they derive from the same identical epns. The passage of electricity is the passage of momentum between atoms. The atoms of one electrode are momentum rich and the atoms of the other are momentum poor. A beam of atoms passing between these plates is a gaseous flow and this flow is deflected in the direction away from the momentum rich electrode. The deflection is a function of the number of epns the atom of the flow has. Their resistance to this deflection is also a function of the number of epns the atom of the flow has. The atom is deflected by the polar effects between the epns of the magnet atoms and the epns of the stream atom. The atom is defined by the atomic number, and the interaction of the atom with other atoms or groups of atoms is defined by the atomic number.

e/m_e=1.758796E7 sqr(cm/g)[1]

$(e/m)^2$=3.09336337E14 cm/gm

if e/m=1 then 1 gm = 3E14 cm

**h/e 4.13556E-7 $cm^{3/2}$ $gm^{1\2}$ /sec

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1. *Hdbk C&P 48th ed*, page f-158

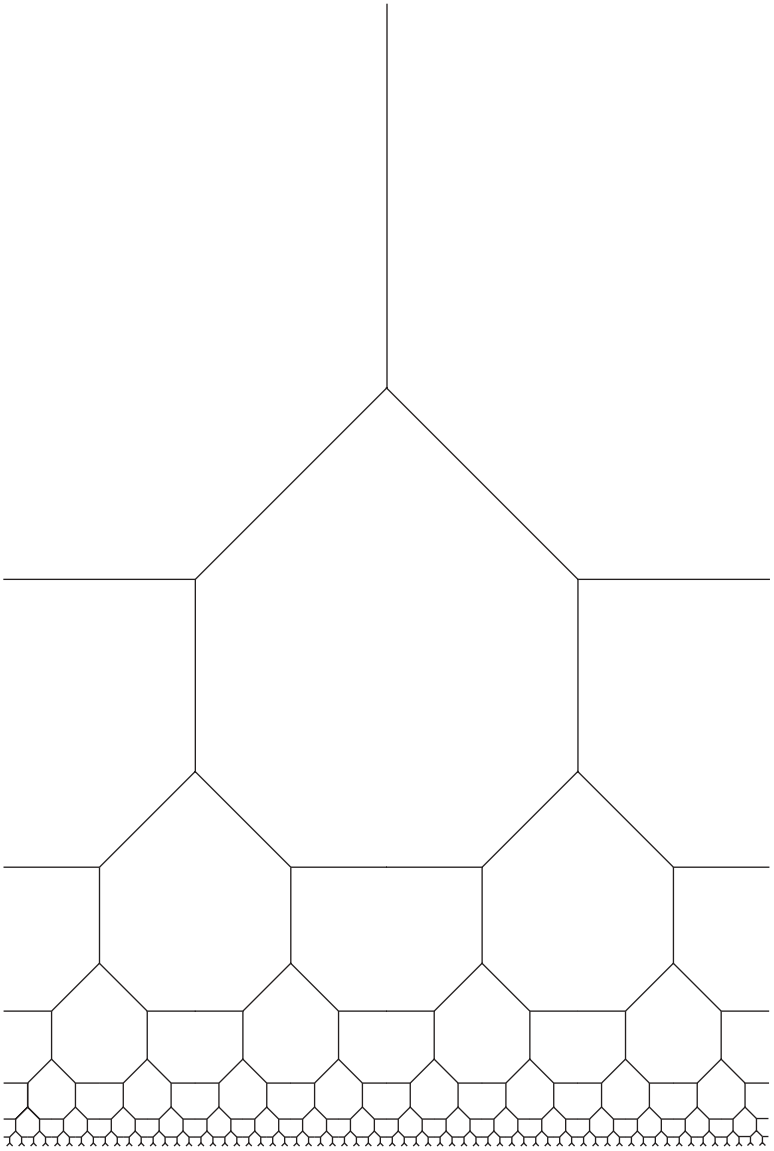
Momentum exchange in a transformer

Primary coils impart momentum through polar interaction between cfus of wire and cfus of core. Polar interactions between core cfus and secondary coil cfus completes the linkage.

Electron wind

The term *electron wind* is used to describe a phenomenon is which a “dense flow of current” produces a gap in the material of a conductor which is attributed to the flow of “electrons”. This is akin to the cup erosion and cone deposition which occurs with automobile ignition breaker points.

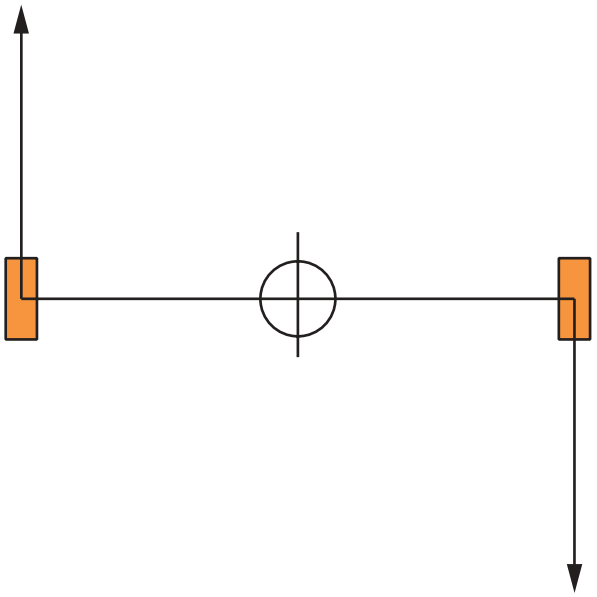
Absorption of momentum



Momentum exchange: absorption.
Each line segment is a momentum vector. Each intersection is a collision between a moving particle and one which is at rest. The moving particle is deflected from its incoming path by 45 degrees; the rest particle acquires the *lost* momentum.

Gyroscope

The gyroscope has its stability from the momenta of the cfus which constitute the rotor.



When the velocities of these cfus are high, the change in their momenta due to the gravitational acceleration is small. The momenta of the cfus lies in the plane of rotation.

Paired cfus exchange momentum

The velocity of each cfu in a rotor is turned through an angle. Its velocity is normal to the radius connecting it to the hub. This change in momentum is provided by another cfu which is diametrically opposite it. This balancing cfu receives its change in momentum from the first cfu. The momentum exchange acts along the diameter connecting the two cfus. This change in momentum is frequently represented as a straight length, but this is an error. The change is always directed radially towards the hub. Because of this fact, the change in the momentum is a circular arc. The vectors for the cfu at two positions are radii with a common center and the momentum change is an arc connecting their tips.

Circular motion

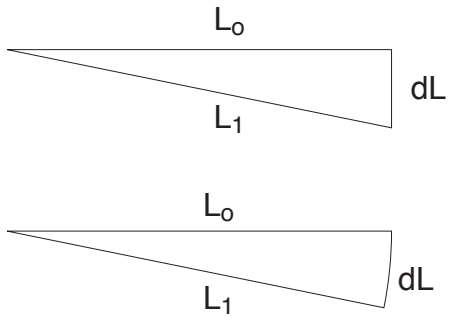
The analysis[1] of the motion of a particle moving along a circular path is erroneous. The displacement of the particle in a given time is a circular arc. The analysis uses the chord of that arc as the displacement. This is an instance of mathematical convenience overtaking reality.

Tethered object

Angular momentum considerations

The concept of angular momentum is employed in discussing a gyroscope. The angular momentum is shown as a vector **L** acting radially outward from the hub. The incremental change in the angular momentum **dL** is shown acting at right angles to **L**. If **dL** is added to **L** vectorially at right angles then **L** will increase. That does not happen, so the vector representation is in error.

For **L** to be constant, **dL** must be a circular arc. The difference in the two representation is shown in the figure.



Angular momentum.
The upper representation of angular momentum change is the orthodox representation. Here, the change in the angular momentum **dL** is shown acting at right angles to the original angular momentum $\mathbf{L_0}$. This results in an increased angular momentum $\mathbf{L_1}$ which does not conform to reality.

The lower representation of angular momentum change is true to the reality. Here, **dL** is a circular arc with radius $\mathbf{L_0}$. $\mathbf{L_1}$ has the same length as $\mathbf{L_0}$ which conforms with reality.

The upper drawing is a right triangle. In this case, the change in the angular momentum is a

1. Sears & Zemansky *University Physics* 2d ed., section 6-2, p. 99.

straight length which is added to the original angular momentum $\mathbf{L_0}$. The new angular momentum is the hypoteneuse of the right triangle $\mathbf{L_1}$. Thus, $\mathbf{L_1}$ does not equal $\mathbf{L_0}$. This is false.

The lower drawing shows **dL** as a circular arc whose radius is $\mathbf{L_0}$. When this is added to $\mathbf{L_0}$, the resulting vector $\mathbf{L_1}$ is the same length as $\mathbf{L_0}$ but its direction has changed. This is true to reality.