

Angular Magnitudes

Alejandro A. Torassa

Creative Commons Attribution 3.0 License
(2013) Buenos Aires, Argentina
atorassa@gmail.com

Abstract

In classical mechanics, this paper presents alternative definitions of angular magnitudes.

Angular Magnitudes

The angular magnitudes for a particle A of mass m_a are defined with respect to a position vector \mathbf{r} which is constant in magnitude and direction.

Mass Moment	$\mathbf{K}_a = m_a (\mathbf{r} \times \mathbf{r}_a)$
-------------	---

Angular Momentum	$\mathbf{L}_a = m_a (\mathbf{r} \times \mathbf{v}_a)$
------------------	---

Dynamic Moment	$\mathbf{M}_a = m_a (\mathbf{r} \times \mathbf{a}_a)$
----------------	---

Angular Work	$W_a = \int \mathbf{M}_a \cdot d(\mathbf{r} \times \mathbf{r}_a)$
--------------	---

Theorem	$W_a = \Delta^{1/2} m_a (\mathbf{r} \times \mathbf{v}_a)^2$
---------	---

Where \mathbf{r}_a , \mathbf{v}_a , and \mathbf{a}_a are the position, the velocity, and the acceleration of particle A.