

66.18: Newton's Laws of Motion (Original)

Newton's laws of motion appear at the beginning of Book I of *Philosophiæ Naturalis Principia Mathematica*:

Axiomata, sive Leges Motus ¹

I. Corpus omne perseverare in statu suo quiescendi vel movendi uniformiter in directum, nisi quatenus a viribus impressis cogitur statum illum mutare.

II. Mutationem motus proportionalem esse vi motrici impressæ, & fieri secundum lineam rectam qua vis illa imprimitur.

III. Actioni contrariam semper & æqualem esse reactionem: sive corporum duorum actiones in se mutuo semper esse æquales & in partes contrarias dirigi.

In modern language,

Vis means force.

Actio (action) and *reactio* (reaction) also refer to force.

Motus (motion) is equivalent to what we now call momentum.

I. Every body preserves in its state of being at rest or of moving uniformly straight forward, except in so far as it is compelled to change its state by forces impressed.

II. A change in motion is proportional to the motive force impressed and takes place along the straight line in which that force is impressed.

III. To any action there is always an opposite and equal reaction; in other words, the actions of two bodies upon each other are always equal and always opposite in direction.

¹ Axioms, or Laws of Motion

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