

Elmhurst College

Physics 311 - Analytical Mechanics

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Two Views of Motion – Ancient and Modern

Aristotle (Ancient View)	Descartes, Galileo, Newton . . . (Modern View)	
General Relations	General Relations	Precise Relations
No external influence Υ <i>earthly bodies</i> move according to their “nature” (elemental makeup) – “Natural Motion.”	No external influence Υ no acceleration.	No external force Υ zero acceleration. (“Law of Inertia” or “Newton’s First Law”)
External influence is required to maintain “Unnatural (or Violent) Motion” of <i>earthly bodies</i> .	External influences cause changes in motion.	$\vec{\mathbf{a}} = \frac{\vec{\mathbf{F}}_{\text{net}}}{\mathbf{M}}$ (Law of Motion” or “Newton’s Second Law”)
Eternal circular motion occurs in the <i>heavens</i> due to perfect nature of the element ether (or quintessence) — “Celestial Motion.”	Same as above. (“Unification”)	Same as above. (“Unification”)