Aristotle’s Law of Motion

Force $F$ acting on a body is proportional to its velocity $v$ of motion;

$$F = mv$$
Newton’s Second Law

\[ F = ma \]
Corrected Newton’s Second Law of Motion

\[ p = m \cdot v \]

where \( p \) = momentum
\( v \) = velocity
\( f \) = force

\[ \frac{dp}{dt} = f \]

\[ v \]

\[ p \]

\[ m \]

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Einstein’s Relativistic Law of Motion

\[ p = \frac{m_0 v}{\sqrt{1 - \frac{v^2}{c^2}}} \]

\[ f = \frac{dp}{dt} \]

where

\( p \) = momentum

\( f \) = force
\[ p = \int_0^\infty F(\tau) d\tau = F^{-1}(\rho) \]

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Aristotle’s mechanics survived for thousands of years until they were displaced by Newton’s. Newton’s theories of motion lasted hundreds of years until they were displaced by Einstein’s. We’ve lived with general relativity for less than a century.