

### 3.5: Linear Momentum

---

 Theorem:

*The total momentum of a system of particles equals the total mass times the velocity of the centre of mass.*

Thus:

$$\mathbf{P} = \sum m_i \mathbf{v}_i = \sum m_i (\bar{\mathbf{v}} + \mathbf{v}'_i) = M\bar{\mathbf{v}} + 0. \quad (3.5.1)$$

---

This page titled [3.5: Linear Momentum](#) is shared under a [CC BY-NC 4.0](#) license and was authored, remixed, and/or curated by [Jeremy Tatum](#) via [source content](#) that was edited to the style and standards of the LibreTexts platform.