Lecture 9, Jan 30, 2023

Electric Scalar Potential of Multiple Charges

- For a point charge not at the origin, we can generalize the expression for electric scalar potential to
$$V = \frac{Q}{4\pi\varepsilon_0 R} = \frac{Q}{4\pi\varepsilon_0 \|\vec{R} - \vec{R}'\|}$$

- With multiple point charges, we can take the superposition as $V_{tot} = \sum_{i=1}^{n} \frac{Q_i}{4\pi\varepsilon_0 \|\vec{R} - \vec{R}_i'\|}$

- For a continuous charge distribution we integrate: $V = \int \frac{\mathrm{d}Q'}{4\pi\varepsilon_0 \|\vec{R} - \vec{R}'\|}$