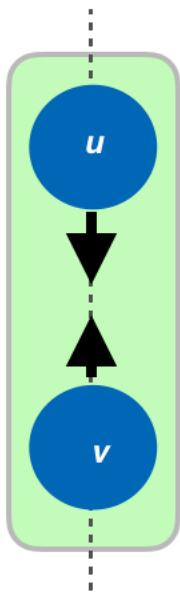


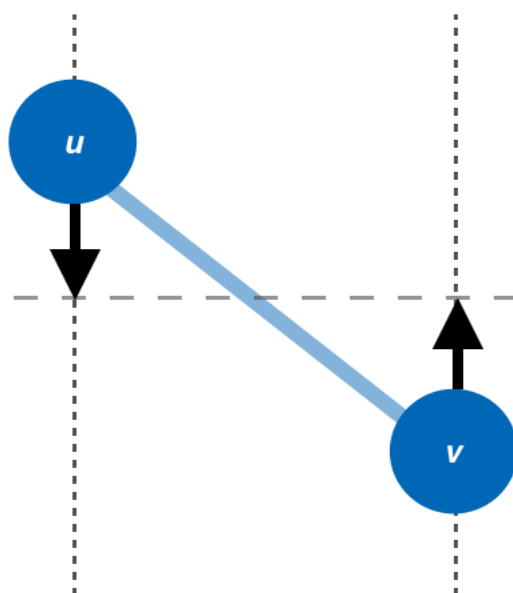
n-n repulsive force

$$f(u, v)_{\text{repulsive}} \leftarrow C_1 + \frac{d_{uv}^2}{K} \vec{vu}$$



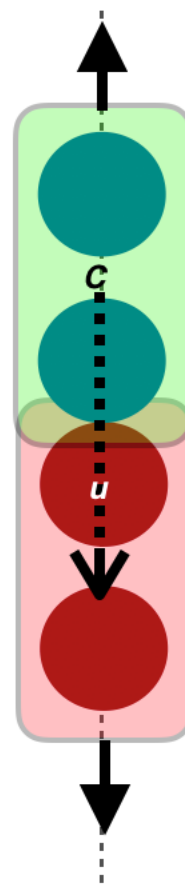
n-p attractive force

$$f(u, v)_{\text{attractive}} \leftarrow \frac{d_{uv}^2}{K} \vec{uv}$$



n-e attractive alignment force

$$f(u, v)_{\text{attractive-alignment}} \leftarrow \pm \left(\frac{K}{d_{uv}^2} \vec{uv} + \frac{K}{d_{uv}^2} \vec{vu} \right)$$



p-p repulsive force

$$f(u)_{\text{repulsive-centroid}} \leftarrow \frac{K}{d_{uc}^2} \vec{cu}$$