$$\mathbf{u}'(\mathbf{x}) = \sqrt{\frac{1}{N}} \sum_{k=1}^{N} \frac{q_\sigma(|\mathbf{r}^k|)}{|\mathbf{r}^k|^3} \mathbf{r}^k \times \alpha^k \tag{1}$$

$$q_i = \begin{cases} \sigma_i[1 - (d^k)^2] & \text{if } d^k < 1 \\ 0 & \text{elsewhere} \end{cases} \tag{2}$$

where $d^k = \sqrt{(r_j^k)^2}$
q can be gaussian
energy spectrum