

$$E = \frac{1}{4\pi\epsilon_0} \sum_{n_x, n_y, n_z} \sum_{i,j} \frac{q_i q_j}{|r + nL|}$$

E_{real}

short ranged
 $\rightarrow \mathcal{O}(N)$

$E_{\text{correct.}}$

constant

E_{dipol}

boundary ϵ'
 $\sim (2\epsilon' + 1)^{-1}$

E_{recip}

standard Ewald
 $\rightarrow \mathcal{O}(N^{3/2})$

MESH BASED ALGORITHMS

calculation of E_{recip} on a mesh
 $\rightarrow \mathcal{O}(N \log(N))$

PME

Lagrange in-
 terpolation

SMOOTH PME

smooth Euler B-
 spline interpolation

P³M

optimized influ-
 ence function