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Langevin Meeting

April 25, 2023

Charge Density

- Charge density ρ coincides if one adds ion charge subtraction to Ulmer's code
- Ion charge subtraction doesn't change emittance for Cold Sphere initial conditions (as expected)
- Should check actual difference between the two ρ fields

Type	Constant Ion Charge Subtraction	Volume Correction	Rho Range
Langevin	yes	yes	<u>[-4.1e9, 1e6]</u>
Langevin	no	no	[0.0, <u>-1.2e-1</u>]
Langevin	no	yes	<u>[-4.1e9, 0.0]</u>
P3M	no	yes	<u>[-4.1e9, 0.0]</u>
P3M	no	no	[0.0, <u>-1.2e-1</u>]
P3M	yes	yes	<u>[-4.1e9, 1e6]</u>

Figure 1: Charge density range with different normalization / constant ion charge subtraction.

Normalized Potential doesn't coincide

- Will have to look at slices and how their shape differs
- Maybe this comes from a mesh size that is too small (currently 32^3)

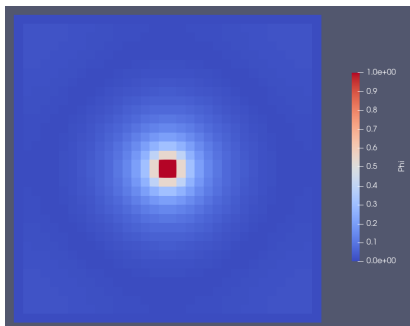


Figure 2: Normalized Potential in Langevin's code.

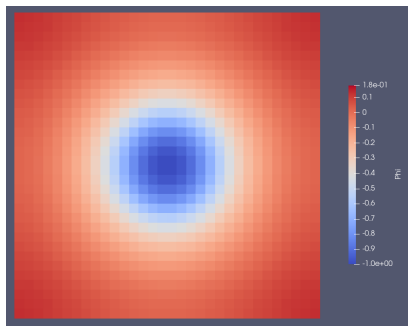


Figure 3: Normalized Potential in Ulmer's code.