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Improving Ion Trap Modeling

Trapped ions qubits are a leading technology for quantum computing. Sandia National Labs develops, uses, and distributes ion traps used by researchers around the world.

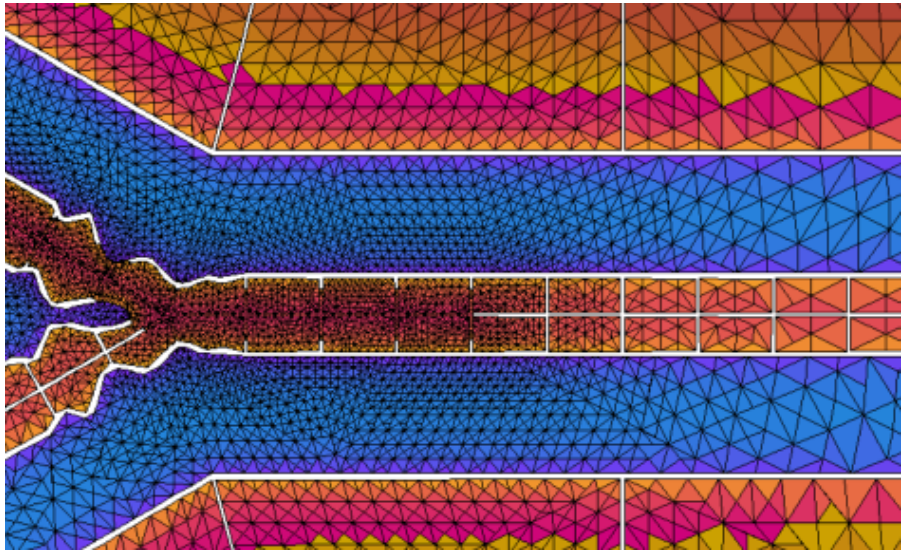
Accurate models of electric fields around an ion trap are necessary.

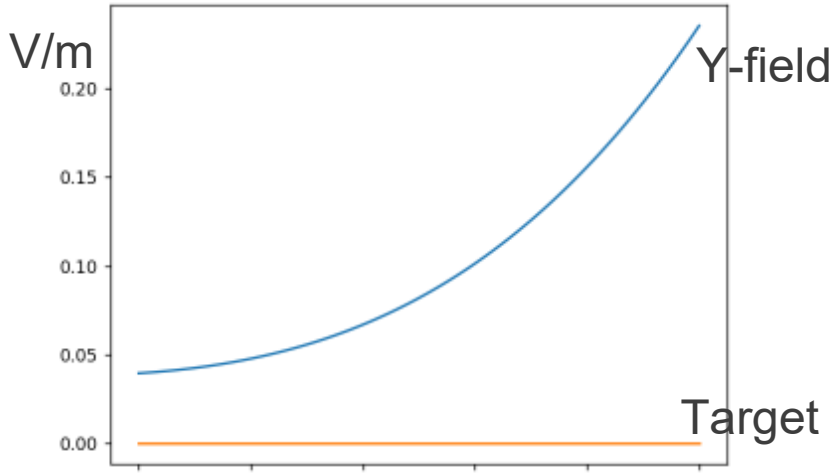
Current methods are adequate but have speed and accuracy shortcomings ($O(n^2)$ in space; $O(n^3)$ in time; unphysical field oscillations)

Possible Project Areas:

- Adaptive Meshing
- Improved Heuristics
- Improvements on the Boundary Element Method

C++ or Python knowledge required; Physics is minimal and can be learned as needed





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