

# Simulations on opacity experiment platform

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- **Objective:**
  - Model components of the opacity experimental platform via numerical simulations.
- **Approach:**
  - Implement implicit Particle-in-Cell (PIC) schemes for large-scale targets to overcome explicit-mode numerical instabilities.
- **Key Results:**
  - Initial benchmarks show consistent normal electric fields across both modes on planar targets.
  - Successfully validates the use of coarser grids for large-scale systems.
- **Performance Gains**
  - Explicit (Fine grid): 4 cores, ~1 hr
  - **Implicit (Coarse grid): 2 cores, ~10 min**
- **HPC system:**
  - SQUID General Purpose CPU Node Group

