

**BREAKING  $10^9$  RAYS/SEC**

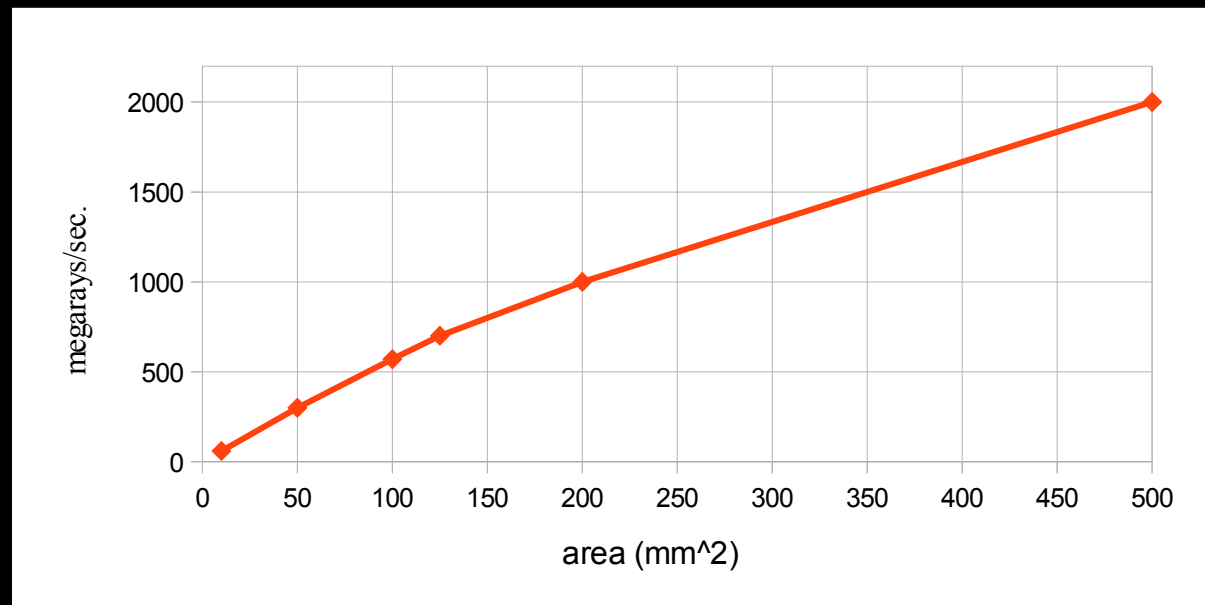
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# Progress

- Implemented stack-based brute force
- Implemented stack-based BVH
- Current performance  $\sim 700$  megarays/sec in  $125\text{mm}^2$ 
  - 2x-3x faster than baseline (my optimizations)
  - Linear wrt cores
  - Low stalls  $\rightarrow$  underutilized hardware
- TODO:
  - Change stack-based BVH to be nonrecursive
  - Make loading dynamic  $\rightarrow$  finishes datastructure
  - By next week I hope

# The Performance/Area Graph

- Implementation expected to load data very infrequently → almost perfect linear scaling
- CPUs/GPUs  $< 700\text{mm}^2$  → an upper limit
- Want graph like:



Questions?