# Parallel Fast Gauss Transform

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# Outline

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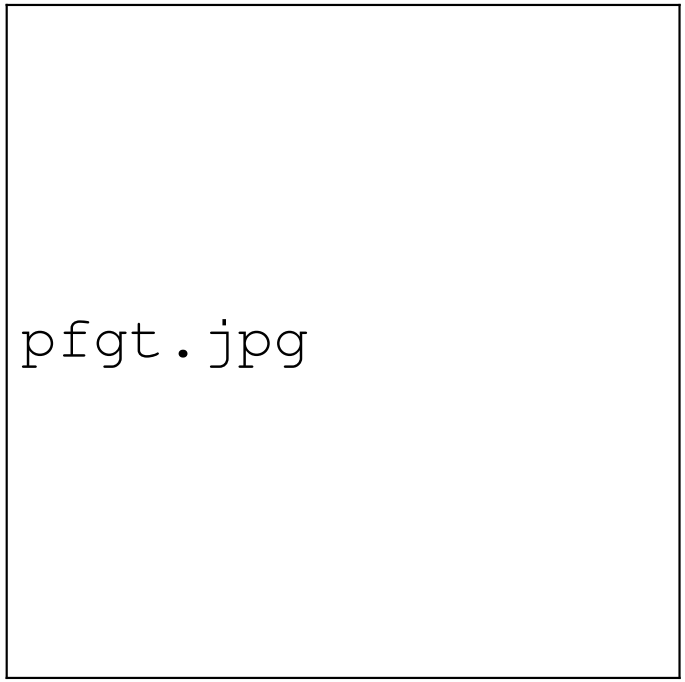
# Parallel Generalized Gauss Transforms

$$F(x) = \int_{\Omega} x - y^{2n} e^{-\frac{x-y^2}{\delta}} f(y)\, d\Omega$$

- Naive algorithm is $\mathcal{O}(N^2)$
- Extension of FGT (Greengard-Strain,1990)
- Works for several ``Gaussian-type'' kernels that arise from parabolic PDEs
- Supports highly non-uniform point distributions
- 120 billion points computation in 140 sec on 4096 cores




Sampath, Sundar and Veerapaneni, Supercomputing 2010 (Best Paper Award Finalist)

Thank You !