

ACCELERATOR SEMINAR

A Fast Butterfly Algorithm for Generalized Radon Transforms

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The fast butterfly algorithm, as originally proposed by Candes, Demanet, and Ying, is used to accelerate the N -body interaction with oscillatory kernel: $u(x) = \sum_y e^{2\pi i \phi(x,y)} g(y)$. In this talk, we consider its application to the Radon transform --- an integral transform taken along arbitrary parameterized sets of smooth curves/surfaces whose application includes imaging, wave/Maxwell equations, and retarded effect in the relativistic E-M fields. The basic idea to reformulate the transform as an oscillatory integral operator and to construct a blockwise low-rank approximation of the kernel function. For 2D problem, the algorithm runs in complexity $O(N^2 \log N)$ as apposed to $O(N^3)$ of the direct time-domain integration.

**Friday, April 15, 2016
11:00 a.m.
CEBAF Center, Room L102**

Coffee before seminar beginning at 10:45 p.m.