

**A Distributed Approach To 3-D Seismic Traveltime
Calculation (presented at SIAM Geosciences 1999)**

We present an efficient scheme for the distributed calculation of travel-times in three dimensions using Sethian's Fast Marching solution to the eikonal equation. Our technique is designed to exploit unused compute cycles on heterogeneous networks of workstations: by using dynamic load balancing and user activity detection, large traveltime problems can be solved without interrupting routine tasks. Shot-level parallelization guarantees almost independent processes allowing reasonable performance on low bandwidth networks. Current work involves development of a complete system for distributed traveltime tomography including a compact checkpointing facility for long-running computations.

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