

[Linardakis, Leonidas](#); [Chrisochoides, Nikos](#)

[Delaunay decoupling method for parallel guaranteed quality planar mesh refinement.](#) (English) [Zbl 1102.65123](#)

[SIAM J. Sci. Comput.](#) 27, No. 4, 1394-1423 (2006).

The authors present a new mesh generation algorithm which produces Delaunay triangulations for two-dimensional domains in parallel. In the first step of the algorithm the domain is divided into subdomains by using a medial axis domain decomposition algorithm. Then a zone around the subdomain boundaries is defined and refined to decouple the mesh generation procedure. The mesh generation in each subdomain is performed in parallel using a sequential mesh generator. The proposed method shows good speed-up and scalability. This is demonstrated by numerical examples.

Reviewer: [Michael Jung \(Dresden\)](#)

**MSC:**

- [65N50](#) Mesh generation, refinement, and adaptive methods for boundary value problems involving PDEs
- [65M50](#) Mesh generation, refinement, and adaptive methods for the numerical solution of initial value and initial-boundary value problems involving PDEs
- [65L50](#) Mesh generation, refinement, and adaptive methods for ordinary differential equations
- [65Y05](#) Parallel numerical computation

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**Keywords:**

[mesh generation](#); [domain decomposition](#); [Delaunay triangulation](#); [parallel algorithms](#); [distributed memory computers](#); [numerical examples](#)

**Software:**

[Triangle](#)

**Full Text:** [DOI](#)