

## 基于Delaunay构网的地层2D, 2.5D建模

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**摘要** 将地质勘探中的钻孔数据抽象为离散点源信息, 设计了离散点的二分拓扑数据结构; 在此基础上, 提出了用三角形表示地层的2D垂直剖面模型与2.5D叠层TIN模型, 并采用Delaunay算法构建模型, 同时对断层、尖灭等突变信息的处理也作了初步探讨; 最后对一些典型地层进行了重构。该模型具有三角网, 便于数据存储、处理与可视化等固有优点, 其建模方法也体现了充分利用计算机、适于海量数据的特点。

**关键词** [数值分析](#); [Delaunay三角化](#); [地层](#); [建模](#)

分类号

## 2D AND 2.5D MODELING OF STRATA BASED ON DELAUNAY TRIANGULATION

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### Abstract

Geological borehole is the main information for engineers to know the distribution of soil strata. In this paper, geological boreholes are abstracted as scattered point data. Each point is the demarcation point between two different strata and a topologic dimidiated data structure is designed for it. Then, the 2D section model of strata was brought out. The model represents the distribution of soil in different depths and each stratum is reconstructed by a series of triangles. In order to represent the horizontal variation of a strata, the 2.5D multi-TIN(triangulated irregular network) model is brought out. The interface between two different soils is also represented by a series of triangles in the 2.5D model. The 2D and 2.5D models were constructed by Delaunay triangulation based on the scattered point data abstracted from boreholes. Then the paper explained the modeling details and method of dealing broken mutation such as fault, dwindles and lens. At last, some assumed classical strata are constructed with the proposed method. The model is convenient for storing, analyzing, visualization and realization by computer. The conventional strata model obtained by corresponding reconstruction algorithms is almost not the final model for visualization. This modeling method based on triangulation can construct the visualization model of strata simultaneously when the reconstructed strata model is accomplished. So it unified the entity strata model and visualization model, which simplifies algorithms and data structure.

**Key words** [numerical analysis](#); [Delaunay triangulation](#); [strata](#); [modeling](#)

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