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Computing straight-line 3D grid drawings of graphs in linear volume. (English)
Zbl 1101.68066

Summary: This paper investigates the basic problem of computing crossing-free straight-line 3D grid drawings of graphs such that the overall volume is small. Motivated by their relevance in the literature, we focus on families of graphs having constant queue number and on \(k\)-trees. We present algorithms that compute drawings of these families of graphs on 3D grids consisting of a constant number of parallel lines and such that the overall volume is linear. Lower bounds on the number of such grid lines are also provided. Our results extend and improve similar ones already described in the literature.

MSC:
68R10 Graph theory (including graph drawing) in computer science
68U05 Computer graphics; computational geometry (digital and algorithmic aspects)

Keywords:
Three-dimensional graph drawing; Track layout; Straight-line drawings

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