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An application of tilings in the hyperbolic plane. (English) [Zbl 1208.52016]

Summary: We construct several types of semi-regular tilings of a hyperbolic unit disk model by defining geometric features of the definition of distance in a hyperbolic plane, area of triangle, and isometry of inversions. We research the method of regular tilings and semi-regular tilings of hyperbolic unit disk model and write a semi-regular tiling construction algorithm using Cabri2 program and Cinderella program. Lastly, we make a product related to traditional heritage cultural patterns using Photoshop, so we model the advertising photos of cities (Seoul, Gwangju).

MSC:
52C20 Tilings in 2 dimensions (aspects of discrete geometry)
51M10 Hyperbolic and elliptic geometries (general) and generalizations

Keywords:
regular tiling; semi-regular tiling; hyperbolic unit disk model; Cabri program; Cinderella program

Software:
Cabri-geometry; Cinderella

Full Text: DOI