Simson, Daniel; Zając, Katarzyna
Applications of mesh algorithms and self-dual mesh geometries of root Coxeter orbits to a Horn-Sergeichuk type problem. (English) Zbl 07425709
Linear Algebra Appl. 632, 79-152 (2022)

Summary: One of the main aims of the paper is to develop the mesh geometry technique for corank-two edge-bipartite graphs $\Delta$ with $n+2 \geq 3$ vertices, and the mesh algorithms introduced in [D. Simson, J. Pure Appl. Algebra 215, No. 1, 13-34 (2011; Zbl 1202.15030); Fundam. Inform. 123, No. 4, 447–490 (2013; Zbl 1290.68138)] and successfully studied in our recent article [Linear Algebra Appl. 610, 698–765 (2021; Zbl 1460.05080)]. We introduce and study the concept of a self-duality of mesh geometries $\Gamma(\tilde{\Delta}, \Phi_\Delta)$ viewed as $\Phi_\Delta$-mesh translation quivers. We show how self-dualities of mesh geometries $\Gamma(\tilde{\Delta}, \Phi_\Delta)$ and the mesh geometry technique is applied to an affirmative algorithmic solution of so called Horn-Sergeichuk type problem [M. Gaśiorczek and D. Simson, Colloq. Math. 127, No. 1, 83–103 (2012; Zbl 1260.06005), Problem 4.3] on the self-congruency of square integer matrices

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