RESEARCH ARTICLE

Tiled orders over discrete valuation rings, finite Markov chains and partially ordered sets. I

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ABSTRACT. We prove that the quiver of tiled order over a discrete valuation ring is strongly connected and simply laced. With such quiver we associate a finite ergodic Markov chain. We introduce the notion of the index $in\,A$ of a right noetherian semiperfect ring A as the maximal real eigen-value of its adjacency matrix. A tiled order Λ is integral if $in\,\Lambda$ is an integer. Every cyclic Gorenstein tiled order is integral. In particular, $in\,\Lambda = 1$ if and only if Λ is hereditary. We give an example of a non-integral Gorenstein tiled order. We prove that a reduced $(0,1)$-order is Gorenstein if and only if either $in\,\Lambda = w(\Lambda) = 1$, or $in\,\Lambda = w(\Lambda) = 2$, where $w(\Lambda)$ is a width of Λ.

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