

Operator algebras and Subproduct Systems arising from Stochastic Matrices

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Arveson-Stinespring subproduct systems are objects arising in classification and dilation theory of non-commutative dynamics. Recent work by Viselter discusses Toeplitz and Cuntz-Pimsner algebras arising from subproduct systems as generalizations of the usual Toeplitz and Cuntz-Pimsner algebras discussed in the works of Pimsner and Katsura. We study subproduct systems arising from stochastic matrices. We express precisely when two such matrices have the same Arveson-Stinespring subproduct system and show that recurrent stochastic matrices are told apart by their Arveson-Stinespring subproduct systems. We compute the Cuntz-Pimsner algebras associated to Arveson-Stinespring subproduct systems arising from finite recurrent matrices and see what information about the matrix is stored in these algebras.