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P. Ara* (`para@mat.uab.es`), Departament de Matematiques, Edifici C, Universitat Autonoma de Barcelona, 08193 Bellaterra, Barcelona, Spain, **M. A. Gonzalez-Barroso** (`mariangeles.gonzalezbarroso@alum.uca.es`), Departamento de Matematicas, Universidad de Cadiz, Apartado 40, 11510 Puerto Real, Cadiz, Spain, **K. R. Goodearl** (`goodearl@math.ucsb.edu`), Department of Mathematics, University of California, Santa Barbara, CA CA 93106, and **E. Pardo** (`enrique.pardo@uca.es`), Departamento de Matematicas, Universidad de Cadiz, Apartado 40, 11510 Puerto Real, Cadiz, Spain. *Fractional skew monoid rings.*

Given an action α of a monoid T on a ring A by ring endomorphisms, and an Ore subset S of T, a general construction of a fractional skew monoid ring $S^{\mathrm{op}} *_\alpha A *_\alpha T$ is given, extending the usual constructions of skew group rings and of skew semigroup rings. In case S is a subsemigroup of a group G such that $G = S^{-1}S$, we obtain a G-graded ring $S^{\mathrm{op}} *_\alpha A *_\alpha S$ with the property that, for each $s \in S$, the s-component contains a left invertible element and the s^{-1}-component contains a right invertible element. In the most basic case, where $G = \mathbb{Z}$ and $S = T = \mathbb{Z}^+$, the construction is fully determined by a single ring endomorphism α of A. If α is an isomorphism onto a proper corner pAp, we obtain an analogue of the usual skew Laurent polynomial ring, denoted by $A[t_+, t_-; \alpha]$. Examples of this construction are given, and it is proven that several classes of known algebras, including the Leavitt algebras of type $(1, n)$, can be presented in the form $A[t_+, t_-; \alpha]$. Finally, mild and reasonably natural conditions are obtained under which $S^{\mathrm{op}} *_\alpha A *_\alpha S$ is a purely infinite simple ring. (Received February 07, 2004)