# Skew generalized power series rings

## Ryszard Mazurek

Bialystok University of Technology, Poland
`r.mazurek@pb.edu.pl`

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A skew generalized power series ring $R[[S, \omega]]$ consists of all functions from a strictly (partially) ordered monoid $S$ to a coefficient ring $R$ whose support contains neither infinite descending chains nor infinite antichains, with pointwise addition, and with multiplication given by convolution twisted by an action $\omega$ of the monoid $S$ on the ring $R$. Special cases of the construction (which was introduced in [4]) are skew polynomial rings, skew Laurent polynomial rings, skew power series rings, skew Laurent series rings, skew group rings, skew Mal'cev-Neumann series rings, the "untwisted" versions of all of these, and generalized power series rings.

In this talk we will discuss some properties and applications of the skew generalized power series ring construction. For example, we will discuss when a skew generalized power series ring $R[[S, \omega]]$ is a ring of a specified type (e.g. right Gaussian, or right uniserial, or right p.q.-Baer [2], [3], [5]), and we will show how this construction can be applied to unify various generalizations of Armendariz rings ([1]).

## References

[1] G. Marks, R. Mazurek, and M. Ziembowski, *A unified approach to various generalizations of Armendariz rings*, Bull. Aust. Math. Soc. 81, 2010, 361-397.

[2] R. Mazurek, *Left principally quasi-Baer and left APP rings of skew generalized power series*, J. Algebra Appl., to appear.

[3] R. Mazurek, M. Ziembowski, *Uniserial rings of skew generalized power series*, J. Algebra 318, 2007, 737-764.

[4] R. Mazurek, M. Ziembowski, *On von Neumann regular rings of skew generalized power series*, Comm. Algebra 36, 2008, 1855–1868.

[5] R. Mazurek, M. Ziembowski, *Right Gaussian rings and skew power series rings*, J. Algebra 330, 2011, 130-146.