# ON SEMILOCAL RINGS OF SKEW GENERALIZED POWER SERIES.

Michał Ziembowski

*Abstract.* Let $S$ be a strictly ordered monoid, $R$ a ring, and $\omega\colon S \to \mathrm{End}(R)$ a monoid homomorphism. Let $A = R[[S,\omega]]$ be the set of all functions $f\colon S \to R$ such that the support contains neither infinite descending chains nor infinite antichains. Then for any $s \in S$ and $f, g \in A$ the set

$$\mathrm{X}_s(f\,,g) = \{(x,y) \in \mathrm{supp}(f) \times \mathrm{supp}(g) \ : \ s = xy\}$$

is finite. Thus one can define the product $fg\colon S \to R$ of elements $f, g \in A$ as follows:

$$(fg)(s) = \sum_{(x,y)\in \mathrm{X}_s(f,g)} f(x)\,\omega_x(g(y)).$$

With pointwise addition and multiplication as defined above, $A$ becomes a ring, called the *ring of skew generalized power series with coefficients in $R$ and exponents in $S$*. Special cases of the construction are skew polynomial rings, skew power series rings, skew Laurent polynomial rings, skew group rings, and the untwisted versions of all of these.

Using some facts concerning radical theory of rings, we will give some necessary and sufficient conditions for the skew generalized power series ring to be semilocal. This is a joint work with R. Mazurek.