Clay, James R.; **Kautschitsch, Hermann**

Near-rings generated by R-modules. (English) Zbl 0811.16036

Math. Pannonica 4, No. 2, 287-297 (1993).

Extending an idea used by *H. Gonshor* [Pac. J. Math. 14, 1237-1240 (1964; Zbl 0128.025)], the authors construct from a ring R and an R- module M near-rings whose underlying set is $M \times R$. They start with formal power series $R[[x]]$ over a ring R. By considering those with zero constant term and factoring out the principal ideal generated by x^k for $k = 1, 2, 3$, an ideal which is both a ring ideal and a near-ring ideal in the near-ring defined on power series when composition is the composition of maps, various near-rings are obtained. The technique can be generalized and a good deal of information about the structure of these generalized near-rings is obtained.

The authors then consider in more detail the case which generalizes the situation when $k = 1$, and which is mentioned at the beginning of this review. They analyse in detail the ideals of such a near-ring, obtaining a substantial amount of detailed information. This is used to identify the four J-radicals of the near-ring as well as the prime and nil radicals. The development is interesting and could well lead to further work in this area.

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MSC:

16Y30 Near-rings
16W60 Valuations, completions, formal power series and related constructions (associative rings and algebras)
16N80 General radicals and associative rings

Keywords:

formal power series; generalized near-rings; ideals; J-radicals; prime and nil radicals

Full Text: EuDML