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by Finite Root Systems Naihong Hu, Dong Liu and Linsheng Zhu; 1. Introduction; 2. Associative super dialgebras and leibniz superalgebras; 2.1. Associative super dialgebras 2.2. Leibniz superalgebra 2.3. Leibniz algebras graded by finite root systems; 3. Leibniz superalgebras graded by finite root systems; 4. The structure of the  $A(m, n)$ -graded Leibniz superalgebras ( $m > n$ ); 5. The structure of  $\mathbb{Z}$ -graded Leibniz superalgebras of other types; ACKNOWLEDGMENTS; References; Tridendriform Algebras Spanned by Partitions Daniel Jimenez and Mara Ronco; Introduction; 1. Preliminaries; Shuffles; 2. Rota-Baxter algebras and tridendriform bialgebras; 3. Tridendriform structure on the space of partitions; 4. Tridendriform algebra structure on the maps between finite sets References Generalized Disjunctive Languages and Universal Algebra Yun Liu; 1. Introduction; 2.  $K$ -Disjunctive languages and universal algebra; 3. Generalized disjunctive hierarchy; Acknowledgements; References; Koszul Duality of the Category of Trees and Bar Constructions for Operads Muriel Livernet; Introduction; 1. The tree category is Koszul; 1.1. The tree category  $\mathcal{TI}$ ; 1.2. Bar construction for the category  $\mathcal{TI}$ ; 1.2.1. Bar construction; 1.2.2. Resolution of left and right  $\mathcal{TI}$ -modules and Tor functors; 1.2.3. Normalized bar complex; 1.3. The Koszul complex of the category  $\mathcal{TI}$  1.3.1. The Koszul complex 1.3.2. The Koszul complex of the category  $\mathcal{TI}$  with coefficients; 1.4. The category  $\mathcal{TI}$  is Koszul; 1.5. Bibliographical remarks; 2. Comparison of three different types of bar constructions for an operad; 2.1. Principle of the bar construction with coefficients; 2.2. Operads as left  $\mathcal{TI}$ -modules; 2.3. Two-sided bar construction from the free operad functor; 2.3.1. The two-sided bar construction; 2.3.2. Right  $\mathcal{TI}$ -modules and  $F$ -functors; 2.4. The bar construction with respect to the monoidal structure 2.5. The classical bar construction of operads, and the levelization morphism

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Sommario/riassunto

The book aims to exemplify the recent developments in operad theory, in universal algebra and related topics in algebraic topology and theoretical physics. The conference has established a better connection between mathematicians working on operads (mainly the French team) and mathematicians working in universal algebra (primarily the Chinese team), and to exchange problems, methods and techniques from these two subject areas.

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