

NEW!

Remove singularities by going noncommutative!

Noncommutative Geometry and Cayley-smooth Orders

Lieven Le Bruyn • University of Antwerp, Belgium

A volume in the **Pure and Applied Mathematics** seriesSeries edited by **Zuhair Nashed**, University of Central Florida, Orlando, USA, and **Earl Taft**, Rutgers University, Piscataway, New Jersey, USA

A NOVEL APPROACH TO NONCOMMUTATIVE GEOMETRY

Noncommutative Geometry and Cayley-smooth Orders explains the theory of Cayley-smooth orders in central simple algebras over function fields of varieties. In particular, the book describes the étale local structure of such orders as well as their central singularities and finite dimensional representations.

After an introduction to partial desingularizations of commutative singularities from noncommutative algebras, the book presents the invariant theoretic description of orders and their centers. It proceeds to introduce étale topology and its use in noncommutative algebra as well as to collect the necessary material on representations of quivers. The subsequent chapters explain the étale local structure of a Cayley-smooth order in a semisimple representation, classify the associated central singularity to smooth equivalence, describe the nullcone of these marked quiver representations, and relate them to the study of all isomorphism classes of n -dimensional representations of a Cayley-smooth order. The final chapters study Quillen-smooth algebras via their finite dimensional representations.

Noncommutative Geometry and Cayley-smooth Orders provides a gentle introduction to one of mathematics' and physics' hottest topics.

FEATURES

- Presents background information on a variety of topics, including invariant theory, algebraic geometry, and central simple algebras
- Discusses the use of étale topology in noncommutative algebra, such as Azumaya algebras and algebras via Luna slices
- Explores the indecomposable roots of quivers, the determination of dimension vectors of simple representations, and the results on general quiver representations
- Contains the main results on Cayley-smooth orders, including semisimple and nilpotent representations
- Provides an introduction to the fast developing theory of Quillen-smooth algebras

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