Vasantha Kandasamy, W. B.; Smarandache, Florentin

Interval semirings. (English) Zbl 1214.16039


Preface: In this book the notion of interval semirings is introduced. The authors study and analyse semirings algebraically. Methods are given for the construction of non-associative semirings using loops and interval semirings or interval loops and semirings. Another type of non-associative semirings are introduced using groupoids and interval semirings or interval groupoids and semirings. Examples using integers and modulo integers are given. Also infinite semirings which are semifields are given using interval semigroups and semirings or semigroups and interval semirings or using groups and interval semirings. Interval groups are introduced to construct interval group interval semirings, and properties related with them are analysed. Interval matrix semirings are introduced.

This book has seven chapters. In chapter one we give the basics needed to make this book a self contained one. Chapter two introduces the notion of interval semigroups and interval semifields and are algebraically analysed. Chapter three introduces special types of interval semirings like matrix interval semirings and interval polynomial semirings. Chapter four for the first time introduces the notion of group interval semirings, semigroup interval semirings, loop interval semirings and groupoid interval semirings and these structures are studied. Interval neutrosophic semirings are introduced in chapter five. Applications of these structures are given in chapter six. The final chapter suggests around 120 problems for the reader.

MSC:

16Y60 Semirings
17A30 Nonassociative algebras satisfying other identities
16--01 Introductory exposition (textbooks, tutorial papers, etc.) pertaining to associative rings and algebras
08A02 Relational systems, laws of composition
20N02 Sets with a single binary operation (groupoids)
12K10 Semifields
65G30 Interval and finite arithmetic

Keywords:

interval semirings; non-associative semirings; interval loops; interval groupoids; interval semifields

Full Text: arXiv