

Enhancing urban environment by environmental upgrading and restoration / edited by Jiri Marsalek ... [et al.].

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Abstrak

The fusion of algebra, analysis and geometry, and their application to real world problems, have been dominant themes underlying mathematics for over a century. Geometric algebras, introduced and classified by Clifford in the late 19th century, have played a prominent role in this effort, as seen in the mathematical work of Cartan, Brauer, Weyl, Chevelley, Atiyah, and Bott, and in applications to physics in the work of Pauli, Dirac and others. One of the most important applications of geometric algebras to geometry is to the representation of groups of Euclidean and Minkowski rotations. This aspect and its direct relation to robotics and vision will be discussed in several chapters of this multi-authored textbook, which resulted from the ASI meeting. Moreover, group theory, beginning with the work of Burnside, Frobenius and Schur, has been influenced by even more general problems. As a result, general group actions have provided the setting for powerful methods within group theory and for the use of groups in applications to physics, chemistry, molecular biology, and signal processing. These aspects, too, will be covered in detail. With the rapidly growing importance of, and ever expanding conceptual and computational demands on signal and image processing in remote sensing, computer vision, medical image processing, and biological signal processing, and on neural and quantum computing, geometric algebras, and computational group harmonic analysis, the topics of the book have emerged as key tools. The list of authors includes many of the world's leading experts in the development of new algebraic modeling and signal representation methodologies, novel Fourier-based and geometric transforms, and computational algorithms required for realizing the potential of these new application fields.