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Hypercomplex Analysis: general theory and applications.

In this talk I will present an overview of the general theory of hypercomplex algebra and analysis, with an emphasis on the study of the associated differential operators, notions and results of holomorphy in this context. Hypercomplex numbers over the field $\mathbb{Q}$ have been studied by E. Artin et al. in the context of analytic number theory, and recently (over $\mathbb{R}$) by physicists such as Catoni et al. in the study of Minkowski space–time geometry and physics. The main purpose of this present work is to bring a unified view of the general theory of hypercomplex analysis, studying both the common features and the differences among several cases of e.g. complex, hyperbolic, multicomplex, ternary, quaternionic, and more general Clifford algebras. For example, we make use of results of abstract algebraic results to properly define notions of conjugations, leading to the study of $\bar{\partial}$–operators and differing notions of holomorphy. This is a part of an extensive collaborative work with D. Alpay, A. Sebbar, D.C. Struppa and M.B. Vajiac. (Received August 28, 2018)