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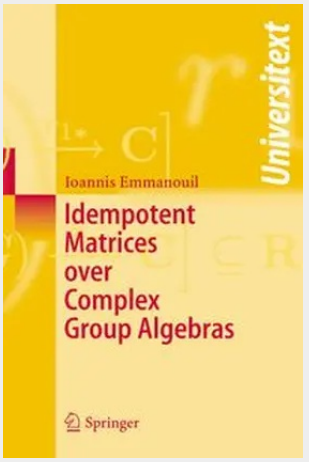
Idempotent Matrices over Complex Group Algebras

The study of idempotent elements in group algebras (or, more generally, the study of classes in the K-theory of such algebras) originates from geometric and analytic considerations. For example, C.T.C. Wall [72] has shown that the problem of deciding whether a ?nitely dominated space with fundamental group? is homotopy equivalent to a ?nite CW-complex leads naturally to the study of a certain class in the reduced K-theoryK (Z?) of the group ringZ?. 0 As another example, consider a discrete groupG which acts freely, properly discontinuously, cocompactly and isometrically on a Riemannian manifold. Then, following A. Connes and H. Moscovici [16], the index of an invariant 0th-order elliptic pseudo-di?erential operator is de?ned as an element in the ? ? K -group of the reduced groupC -algebraCG. 0 r Theidempotentconjecture(alsoknownasthegeneralizedKadisonconjec- ? ? ture) asserts that the reduced groupC -algebraCG of a discrete torsion-free r groupG has no idempotents =0,1; this claim is known to be a consequence of a far-reaching conjecture of P. Baum and A. Connes [6]. Alternatively, one mayapproachtheidempotentconjectureasanassertionabouttheconnect- ness of a non-commutative space;ifG is a discrete torsion-free abelian group ? thenCG is the algebra of continuous complex-valued functions on the dual r

A unifying aspect of many problems is stressed Several technical results are derived in full details Includes supplementary material: sn.pub/extras



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