

# On the Algebra of Convex Bodies and Errors

**SVETOSLAV MARKOV**  
Bulgarian Academy of Sciences  
Inst. of Mathematics and Comp. Sc.  
Section Biomathematics  
Acad. G. Bonchev st., block 8  
BG-1113 Sofia, Bulgaria  
e-mail: [smarkov@iph.bio.bas.bg](mailto:smarkov@iph.bio.bas.bg)

We extend the set of convex bodies up to differences (factorized pairs) of convex bodies; thereby (Minkowski) multiplication by real scalar is extended in a natural way. We show that differences of convex bodies form a special quasilinear space with group structure. The latter is abstractly studied by introducing analogues of linear combinations, dependence, basis, associated linear spaces etc. Algebraic systems abstracting properties of errors (symmetric intervals) are studied. Certain algebraic structures close to ordered rings, fields and algebras are obtained.