Geometry,
Integrability
and
Quantization[XIX]

CLIFFORD ALGEBRAS AND THEIR APPLICATIONS TO LIE GROUPS AND SPINORS

DMITRY SHIROKOV

Higher School of Economics, National Research University, 101000 Moscow, Russia

Abstract. We discuss some well-known facts about Clifford algebras: matrix representations, Cartan's periodicity of 8, double coverings of orthogonal groups by spin groups, Dirac equation in different formalisms, spinors in n dimensions, etc. We also present our point of view on some problems. Namely, we discuss the generalization of the Pauli theorem, the basic ideas of the method of averaging in Clifford algebras, the notion of quaternion type of Clifford algebra elements, the classification of Lie subalgebras of specific type in Clifford algebra, etc.

MSC: 15A66, 22E60, 35Q41
Keywords: Clifford algebra, Dirac equation, Lie algebras, Lie groups, matrix representations, method of averaging, Pauli theorem, quaternion type, spin groups, spinors

CONTENTS