

Pure Spinor Geometry: Its Possible Role in Quantum Physics

Paolo Budinich

Abstract. Recently pure spinor geometry has allowed, after decades of desperate efforts, some definite steps forward for the solution of one of the main unsolved problems of theoretical physics: that of quantum gravity; thus confirming the role of pure spinors in quantum physics. In this paper we try to show that it might be a fundamental role, since pure spinors not only are at the origin of strings, now often adopted in quantum field theory, where they substitute the Euclidean concept of point-event, but also they provide quite simple explanations to several aspects of elementary particle phenomenology, often cumbersome and obscure. Furthermore they naturally define compact manifolds in momentum spaces where a purely geometrical way may be found for the representation and easy solution of some dynamical quantum problems, as first indicated, already a long time ago, by V. Fock.

Keywords. Spinors, lepton multiplet, string, elementary particle generation.

Foreword

This paper is the follow-up of reference [10] published in the Proceedings of the VI International Conference on Clifford Algebras. In the following, we will refer to that paper also with: see I.

Paolo Budinich
International School for Advanced Studies,
Trieste, Italy
e-mail: fit@ictp.it

Received: June 2005

Accepted: July 2006