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The Implicate Order, Algebras, and the Spinor

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We review some of the essential novel ideas introduced by Bohm through the implicate order and indicate how they can be given mathematical expression in terms of an algebra. We also show how some of the features that are needed in the implicate order were anticipated in the work of Grassmann, Hamilton, and Clifford. By developing these ideas further we are able to show how the spinor itself, when viewed as a geometric object within a geometric algebra, can be given a meaning which transcends the notion of the usual metric geometry in the sense that it must be regarded as an element of a broader and more general pregeometry.

1. INTRODUCTION

Recently Bohm[1,2] has discussed the general significance of the concept of order in physical theories and has pointed out that the Cartesian order, which dominates contemporary scientific thinking, may have reached the limits of its validity when it comes to interpreting quantum mechanics and its relativistic generalization. He has proposed a new order, called the implicate order, which is very different from the Cartesian order and, at this stage of its development, seems to offer the possibility of an alternative framework in which to encompass both quantum phenomena and relativity, while at the same time giving new insights into physical processes in general and into the structure of spacetime in particular.

Bohm has so far limited himself to questions of a rather general nature, his aim being to provide an overall structure within which new questions can be raised. He has also made some preliminary suggestions as to how this structure may be put into a mathematical form. We wish to look into these proposals in more detail and to explore further some of their implications.

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