



BOOK REVIEW

Differential Geometry From a Singularity Theory Viewpoint, by Shyuichi Izumiya, Maria del Carmen Romero Fuster, Maria Aparecida Soares Ruas and Farid Tari, World Scientific, Singapore 2016, xiii+368 pp, ISBN 978-9814590440

It is well known that during the 18th century and the 19th century, differential geometry has arose and developed as a result of and in fascinating connection to the mathematical analysis of curves and surfaces. Since then, many works have been devoted to the general theory of curves and surfaces in an Euclidean space (or more generally in a Riemannian manifold). So now, we have an extensive knowledge about their local geometry as well as of their global geometry [1]. Also, there were many important links between geometry of curves and surfaces and other sciences especially physics, biology, chemistry, engineering, etc... Besides the works on geometry of curves and surfaces in Euclidean space, there are many important works on these subjects in affine, hyperbolic or Minkowski spaces. As we know, Minkowski spaces were introduced by the mathematician Hermann Minkowski for Maxwell's equations of electromagnetism, the mathematical structure of Minkowski space-time was shown to be an immediate consequence of the postulates in special relativity. Minkowski space is also closely associated with Einstein's theory of special relativity, and is the most common mathematical structure on which special relativity is formulated. The theory of curves and surfaces are important to understand the special relativity and its tools. For example, the geometry of null hypersurfaces in space-time has played an important role in the development of general relativity, as well as in mathematics and physics of gravitation. It is necessary, for example, for understanding the causal structure of space-time, black holes, asymptotically flat systems and gravitational waves [2].

This book is a welcome addition to the literature on differential geometry in Euclidean and Minkowski spaces. This book offers a new look at the classical subjects of curves and surfaces, namely from the point of view of the singularity theory. The core of the book are the research results and interests of the authors and their collaborators.