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Neutrosophic Sets and Systems {Special Issue: Proceedings of the International Conference Advances in SuperHyperStructures and Applied Neutrosophic Theories, Universidad de Guayaquil, Ecuador, 28-29 November 2024} Vol. 74.

This volume contains the proceedings of the conference held at the University of Guayaquil on November 28 and 29, 2024, featuring contributions from researchers representing Colombia, Cuba, Ecuador, Spain, the United States, Greece, Japan, Mexico, and Peru.

The conference focused on SuperHyperStructures and Applied Neutrosophic Theories, commemorating the 30th anniversary of neutrosophic theories and their extensive applications. The topic of SuperHyperStructures and Neutrosophic SuperHyperStructures explores advanced

mathematical frameworks built on powersets of a set H, extending to higher orders $P_n(H)$. SuperHyperStructures are constructed using all non-empty subsets of H, while Neutrosophic SuperHyperStructures incorporate the empty set ϕ, representing indeterminacy. These structures model real-world systems where elements are organized hierarchically, from sets to sub-sets and beyond, enabling the analysis of complex and indeterminate relationships.

Held under the motto "Uniendo Saberes para la Innovación Multidisciplinaria" ("Uniting Knowledge for Multidisciplinary Innovation"), the event was graced by the presence of key authorities from the University of Guayaquil. Established on December 1, 1867, this esteemed institution is the largest university in Ecuador. Over its distinguished history, it has produced 11 Presidents, eight Vice Presidents, and numerous senators and representatives, who have been either students or faculty members, solidifying its reputation as a cradle of leadership.

The conference began with a keynote lecture by Prof. Florentin Smarandache, titled "Neutrosophic and Plithogenic Theories: Origin and Applications". This captivating presentation provided a comprehensive overview of the origins, evolution, and diverse applications of neutrosophic and plithogenic theories.

Special recognition was extended to Dr. Florentin Smarandache for his groundbreaking contributions to the advancement of neutrosophic sciences worldwide and his remarkable legacy in academia and research.

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On behalf of the International Association of Neutrosophic Science and the Latin American Association of Neutrosophic Science, Dr. Smarandache presented special awards to Dr. Francisco Morán Peña, Rector of the University of Guayaquil, and Dr. Sofía Lovato Torres for their significant efforts in promoting neutrosophic sciences at the university and across Ecuador. Additionally, Dr. Lorenzo Cevallos Torres was honored for his pioneering contributions to neutrosophic research at both institutional and national levels.

Presentations during the conference spanned a wide array of disciplines, including statistics, business administration, social sciences, and industrial engineering. Moreover, less frequently

explored areas, such as chemistry, were addressed, showcasing the versatility and expanding scope of neutrosophic applications.

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The contributions outlined in this volume highlight the innovative use of neutrosophic ideas across various domains, such as healthcare, environmental management, education, and business. Notable studies include the application of neutrosophic frameworks to improve medical outcomes for diabetic patients, the analysis of social competence and gender disparities in entrepreneurship, and the optimization of agricultural practices through sustainable methodologies. Research also delved into indigenous rights and environmental conservation using neutrosophic multi-criteria decision-making and explored novel applications in chemistry and bioinsecticides.

Several studies examined the connection between neutrosophic theories and the philosophical principles of Incan and indigenous South American cultures, emphasizing their shared focus on harmony, balance, and holistic problem-solving. These works underscore the adaptability of neutrosophic science in addressing complex challenges across diverse fields.

We hope that the research presented in this volume will further advance the understanding and application of neutrosophic theories, serving as a vital resource for scholars. This special issue celebrates both the 30th anniversary of neutrosophic theory and the 70th birthday of its founder, Dr. Florentin Smarandache.

November 2024

Florentin Smarandache
Maikel Y. Leyva Vázquez
Mohamed Abdel-Basset

The photographs accompanying this special issue were captured by Karina Peñafiel Coello, MSc, from the University of Guayaquil.