



Seminário (Presencial/Online)

CIMA/DMAT/UÉ

Colégio Luís António Verney, Anfiteatro n.1

27 de Abril 2022, 10:00

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ID da reunião: 836 9617 0312; Senha de acesso: 588868

**Two approaches to the study of Ulam stabilities
for different types of equations.**

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Abstract

An interesting and famous talk presented by S. M. Ulam in 1940 triggered the study of stability problems for various functional equations. Ulam discussed a number of important unsolved mathematical problems. Among them, a question concerning the stability of homomorphisms seemed too abstract for anyone to reach any conclusion. In the following year, D. H. Hyers was able to give a partial solution to Ulam's question that was the first significant breakthrough and step toward more solutions in this area. After that preliminary answer, other approaches emerged, and new orientations were introduced by Th. M. Rassias, introducing therefore the so-called Hyers-Ulam-Rassias stability. Different generalizations were obtained by other researchers, by considering the possibility of using different involved norms and others types of equations. In this talk our main goal is to present the various approaches and techniques used to study Hyers-Ulam, Hyers-Ulam-Rassias and σ -semi-Hyers-Ulam stabilities for different types of equations.

Keywords: Hyers-Ulam stability, σ -semi-Hyers-Ulam stability, Hyers-Ulam-Rassias stability, Banach fixed point theorem, Bielecki metric, higher order integro-differential equations, Bessel differential equation.

Acknowledgements

This talk has been partially supported by Center of Mathematics and Applications of University of Beira Interior (CMA-UBI) through the Portuguese Foundation for Science and Technology (FCT - Fundação para a Ciência e a Tecnologia), under the reference UIDB/00212/2020.

Referências

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