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Seminário/Seminar

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An Overview on Ulam Type Stabilities

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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. 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, others types of equations, but always resorting to the useful Banach Fixed Point Theorem. 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.

The talk is based on joint works with L. P. Castro from University of Aveiro and Center for Research and Development in Mathematics and Applications, Portugal.

Keywords: Hyers-Ulam stability, σ -semi-Hyers-Ulam stability, Hyers-Ulam-Rassias stability, Banach fixed point theorem, higher order integro-differential equations, Bessel differential equation, fractional boundary value problem.

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