

Some stability theorems, some characterizations of the inner product spaces and some consequences of these results

Drd. Monea Mihai Petru
University "Politehnica" of Bucharest
Department of Mathematics & Informatics
Splaiul Independenței 313, Bucharest 060042, Romania
E-mail: mihaimonea@yahoo.com

PhD Thesis

Supervised by
Prof. Univ. Dr. Habil. Cristinel Mortici

Short abstract

The PhD Thesis, with the title: *Some stability theorems, some characterizations of the inner product spaces and some consequences of these results*, contains some of the results obtained by the author during his studies. The thesis has two distinct parts, corresponding to the author research domains.

The first part, with the title: *New results about some mean value theorems, some intermediary points and its Hyers-Ulam stability*, has four chapters. In Chapter 1.1, we present a unitary viewpoint about the stability of the intermediary point arising from differential mean theorems. The Chapter 1.2 is reserved to the results concerning divided differences. In Chapter 1.3, we present some results involving the stability of the points arising from integral mean theorems. In Chapter 1.4, we define two types of stability and we study some known fixed point theorems from this viewpoint.

The second part, with the title: *New results about the inner product spaces*, has two chapters. In Chapter 2.1, we present some new characterizations of the inner product spaces involving identities or inequalities. The Chapter 2.2 contains some new inequalities that hold for some normed spaces or some inner product spaces. We present some algebraic, some geometrical or some convexity inequalities.

Keywords

Hyers-Ulam stability, continuous functions, differentiable functions, divided differences, fixed point, mean theorem,

normed spaces, inner product spaces, inequalities, convex functions, Wright-convex functions