

# LYAPUNOV THEOREMS ON ASYMPTOTIC STABILITY OF DYNAMICAL SYSTEMS ON TIME SCALES

EWA PIOTROWSKA, ZBIGNIEW BARTOSIEWICZ (BIAŁYSTOK, POLAND)

The talk is devoted to the Lyapunov's direct method used to establish stability theorems of dynamical systems on time scales. The main advantage of this approach is that the stability can be obtained without any prior knowledge of the solutions. Lyapunov's direct method uses a generalized energy function to study the stability of the solutions. Lyapunov functions are useful tools which can handle the task of the generalized concept of energy and by using their properties one can examine the stability of the systems. The language of time scales is used to unify the results on asymptotic stability of discrete and continuous time-variant systems. The converse Lyapunov theorems on time scales are also provided. By using scalar Lyapunov functions we get necessary and sufficient conditions for asymptotic stability of time-variant systems on arbitrary time scales.