SUMMARY OF DOCTORAL THESIS

The author's name: KHONG CHI NGUYEN

Thesis's title:

   STABILITY AND ROBUST STABILITY OF LINEAR DYNAMIC EQUATIONS ON TIME SCALES

Scientific branch of the thesis: Mathematics;   **Major:** Analysis;   **Code:** 9460102

The name of training institution: Hanoi Pedagogical University 2

1. Thesis's purpose and objectives

Studying stability and robust stability of linear time-varying dynamic equations on time scales.

2. Research methods: Techniques of Analysis on time scales, stability theory, and the approach by the projectors for linear implicit systems.

3. Major results and conclusions

3.1. *The major results*

i) Introduction of the concept for Lyapunov exponent on time scales and study of the relationship between the Lyapunov exponent and the stability of linear dynamic equations on time scales in cases where the matrix of coefficients is bounded or is a constant matrix;

ii) Establishment of the robust stability of implicit dynamic equations with Lipschitz perturbations and Bohl-Perron type stability theorem for implicit dynamic equations on time scales; suggestion of the concept for Bohl exponent and study of the relation between exponential stability and the Bohl exponent when dynamic equations under perturbations acting on the system data;

iii) Recommendation of the radius of stability formula for implicit dynamic equations on time scales under some structured perturbations acting on the right-hand side or both side-hands.

3.2. *Conclusions*

   - The dissertation's content is matchable with the training major.

   - The results of the dissertation are new.

   - Further research directions: Using the Lyapunov exponent method to research the stability for linearized nonlinear dynamical systems. Studying the stabilization, robustness stabilization and/or the controllability… for implicit dynamic equations, or the relation between Bohl exponent and robust stability of implicit dynamic equations under non-linear perturbations.

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<tr><td align="center">ON BEHALF OF
ACADEMIC SUPERVISORS</td><td align="center">*Hanoi, July* 2nd, 2020
PH.D. STUDENT</td></tr>
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Assoc. Prof. Dr. Do Duc Thuan</td><td align="center">

Khong Chi Nguyen</td></tr>
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