

## **SUMMARY**

Full name of Ph.D. student: **Nguyen Van Thang**

Thesis title: On stability estimates and regularization of backward integer and fractional order parabolic equations

Specialty: Mathematical Analysis; Code: 9 46 01 02

Training institution: Vinh University

### **1. Research purposes**

Our goal is to establish new results about stability estimates and regularization for backward integer and fractional order parabolic equations.

### **2. Research subjects**

For the parabolic equations of the integer order, we focus on research type Burger's equations backward in time, semilinear parabolic equations backward in time. For the parabolic equations of the fractional order, we focus on research linear equations.

### **3. Research Methods**

We use methods like logarithmically convex method, nonlocal boundary value problem method, Tikhonov regularization method, and mollification method.

### **4. The new contributions**

- We have obtained the new results of stability estimates and Tikhonov regularization for semilinear parabolic equations backward in time.
- We have obtained the new results of stability estimates only with conditions of bounded solutions at  $t=0$  for semilinear parabolic equations with time-independent coefficients backward in time.
- We have obtained the new stability estimates for type Burgers equations.

- Regularized the problems of fractional parabolic equations backward in time by mollification method with both a priori and a posteriori parameter choice rules. After that, we give a numerical example to illustrate our theory.

*Nghe An, March 5, 2019*

**On behalf of the supervisors**

**Ph.D. student**

**Assoc. Prof. Dr. Nguyen Van Duc**

**Nguyen Van Thang**