


PERSONAL:

Name: Xiong You
Department: Department of Mathematics, College of Sciences
Gender: Male
Degree: Ph.D.
Title: Professor
Major: Applied Mathematics
Graduated University: Nanjing University



Research Field: Structure-preserving algorithms for oscillatory differential equations; Structure theory for genetic regulatory oscillators with structure-preserving simulation; Stochastic simulation of oscillatory biochemical reactions

Building: B412 Fourth Teaching Building
Email: youx@njau.edu.cn

BRIEF INTRODUCTION:

My research is concentrated on the numerical solution of differential equations, mathematical biology and computational systems biology. My research interests include structure-preserving computation of oscillatory differential equations, modeling and simulation of cell systems. I have developed ERKN methods, EN-tree theory and B-series theory for initial value problems of second-order differential equations and has opened up the new field of structure-preserving computation of gene regulatory oscillators and the stochastic biochemical oscillatory process in cells. Recently I am particularly interested in modeling, analysis and numerical simulation of the regulatory system of cold-responsive genes and the circadian clock in plants. My work has been published in scientific journals such as *Comput. Phys. Commun.*, *Appl. Numer. Math.*, *J. Comput. Appl. Math.*, *Numer. Algor.*, *Comput. Math. Methods Med.* My research has been supported by the National Natural Science Foundation of China.

EDUCATION:

Ph.D., Computational Mathematics, Nanjing University, 2009
M.S., Applied Mathematics, Nanjing University of Science and Technology, 2001
B.S., Mathematics, Soochow University, 1987

PROJECTS UNDERTAKEN:

- (7) Chair the Natural Science Foundation of China (NSFC) Project “Studies on structure theory and structure-preserving simulation of genetic regulatory network oscillators” under Grant No. 11171155
- (6) Participate the Natural Science Foundation of China (NSFC) Project “Structure-preserving algorithms for highly oscillatory dynamical systems with applications” under Grant No. 11271186
- (5) Participate the Research Foundation Project for the Doctoral Program of Higher Education “Structure-preserving algorithms for quantum dynamical systems” under Grant No. 20100091110033

(4) Participate the Natural Science Foundation of China (NSFC) Project “Theory and methods for the numerical solution of oscillatory problems in quantum dynamical systems” under Grant No. 10771099

(3) Participate the Fundamental Research Funds for the Central Universities “Mathematical Analysis and Effective Simulation of Enzymatic Reaction Kinetics in Cells” under Grant No. KYZ201424

(2) Participate the Fundamental Research Funds for the Central Universities “Structure-Preserving Numerical Simulation of Nonlinear Gene Regulatory Oscillators with Negative Feedback Loops” under Grant No. Y0201100265

(1) Chair the Youth Innovation Fund Project of College of Sciences, Nanjing Agricultural University “The existence of solution to a class of semi-linear elliptic type of differential equations”

TEACHING INFORMATION:

Calculus (fall)

Linear Algebra (spring)

Probability (spring)

Numerical Analysis (fall)

Graduate Courses

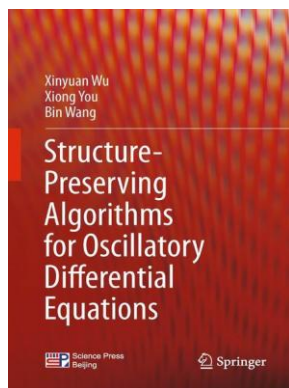
Numerical Solution of Differential Equations (fall)

Structure-Preserving Algorithms for Differential Equations (Spring)

Mathematical Models in Biology (fall)

Engineering Mathematics (fall)

PUBLICATIONS:



Monograph:

Xinyuan Wu, Xiong You and Bin Wang, Structure-preserving Algorithms for Oscillatory Differential Equations, Springer (2013)

Journal Papers:

(6) Ruqiang Zhang, Wenjuan Jiang, Julius Osato Ehigie, Yonglei Fang and **Xiong You***, Novel phase-fitted symmetric splitting methods for chemical oscillators, *Journal of Mathematical Chemistry*. **2016**, DOI: 10.1007/s10910-016-0684-x.

- (5) Yanwei Zhang, **Xiong You*** and Yonglei Fang, Exponentially fitted multi-derivative linear methods for the resonant state of the Schrödinger equation, *Journal of Mathematical Chemistry*. **2016**, DOI:10.1007/s10910-016-0683-y.
- (4) Zhaoxia Chen, Ruqiang Zhang, Wei Shi and **Xiong You***, *International Journal of Computer Mathematics*, **2016**, DOI: 10.1080/00207160.2016.1167197.
- (3) Zhaoxia Chen, Zeyu Qiu, Juan Li and **Xiong You***, Two-derivative Runge-Kutta-Nystrom methods for second-order ordinary differential equations, *Numerical Algorithms*. **2015**, 70, 897–927.
- (2) **Xiong You***, Yuanmei Zhou, Xiaohao Cheng, A novel family of P-stable symmetric extended linear multistep methods for oscillators, *Applied Mathematics and Computation*. **2014**, 249, 597–610.
- (1) Xiong You*, Yonglei Fang and Jinxi Zhao, Special extended Nystrom tree theory for ERKN methods, *Journal of Computational and Applied Mathematics*. **2014**, 263, 478–499.