Date of this CV: 20 Jan 2023

Name: Yongzheng Sun
Birth date: 23 November 1979

Contact Details

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Employment

01/01/2017-present **Professor**, School of Mathematics, China University of Mining and Technology(CUMT)
15/01/2018-20/03/2018 **Visiting Scholar**, School of Mathematics, University of Leeds
20/01/2016-20/03/2016 **Visiting Scholar**, Isaac Newton Institute for Mathematical Sciences University of Cambridge
01/02/2014-31/01/2015 **Visiting Scholar**, Mathematical Institute， University of Oxford
01/12/2012-01/01/2013**Visiting Scholar**, School of Mathematical Science, Fudan University
01/01/2011-31/12/2016 **Associate Professor**, School of Science, CUMT
01/01/2008-31/12/2010 **Lecturer**, School of Science, CUMT
01/07/2004-31/12/2007 **Teaching Assistant**, School of Science, CUMT

Education

01/09/2007-30/06/2010 **PHD in Applied Mathematics**, Fudan University
Thesis: Synchronization of Chaos and Consensus of Multi-agent systems
Supervisor: Prof. Ruan Jiong
01/09/2001-30/06/2004 **MSc in Applied Mathematics**, Jiangsu Normal University
Thesis: Eigenvalue Problem of a class of Differential Equations
Supervisor: Prof. Jingxian Sun
01/09/1997-30/06/2001 **BSc in Applied Mathematics**, Jiangsu Normal University
Thesis: Existence of solution of a Satellite Orbit equation
Supervisor: Prof. Minru Zhou

Research Grants and Funding

01/01/2023-31/12/2026 **National Natural Science Fund of China**，Grant no. 12271519，Resilience, tipping points perdition and controllability of complex ecological networks with stochastic fluctuating interactions, Role:**PI**
01/01/2022-31/12/2025 **National Natural Science Fund of China**，Grant no. 22120102001，Miniaturization and active locomotion of soft-bodied robots driven by nonlinear reacting waves, Role:**PI**
01/01/2021-31/12/2023 **National Natural Science Fund of Jiangsu**，Grant no. BK20211241，Directional switching of collective animal motion in stochastic environments, Role:**PI**
01/04/2017-31/03/2019 **National Natural Science Fund of China**，Grant no. 116111243，Stability of complex ecological networks, Role:**PI**

01/08/2016-31/12/2016 **National Natural Science Fund of China**，Grant no. 61681240393, Stochastic dynamics of complex networks，Role: **PI**

01/01/2015 –31/12/2017 **National Natural Science Fund of China**，Grant no. 61403393, Synchronization and optimization of time-delayed complex dynamical networks with noise coupling，Role: **PI**

01/01/2013-31/12/2013 **National Natural Science Fund of China**，Grant no. 11226150, Consensus problem of second-order multi-agent systems with noise coupling and communication time delays, Role: **PI**

01/01/2013-31/10/2013**National Natural Science Fund of China**，Grant no. 61391240193 Epidemic modelling on complex networks with Markov switching, Role:**PI**

Main Publications

As of Jan 2023, I have more than 40 peer-reviewer publications, more than 900 citations and an h-index of 17. All publications that are listed below have been refereed. The following highly related journals contain some of my papers: *Physical Review Letters, SIAM Journal on Applied Mathematics, Physical Review Research, Physical Review E, Chaos , IEEE TMSC,IEEE TNSE*. The corresponding authors are marked with an asterisk.

[23]Yongzheng Sun, Siyang Leng, Ying-Cheng Lai, Celso Grebog,Wei Lin, Closed-loop control of complex networks: A trade-off between time and energy, *Physical Review Letters,* 2017,119 (19), 198301.

[22]Yongzheng Sun, W. Li, L. Li, G. Wen,S. Azaele, W.Lin. Delay-induced directional switches and mean switching time in swarming systems. *Physical Review Research*, 2022, 4(3): 033054.

[21]N.Liang, M. Liu, **Yongzheng Sun***, R.Xiao, L.Zhao. Time and Energy Costs for Synchronization of Kuramoto-Oscillator Networks With or Without Noise Perturbation. *SIAM Journal on Applied Mathematics*, 2022, 82(4): 1336-1355.

[20]J.Chang, H.Shi, S. Zhu, D.Zhao, **Yongzheng Sun***. Time Cost for Consensus of Stochastic Multiagent Systems With Pinning Control. *IEEE Transactions on Systems, Man, and Cybernetics: Systems*, 2022, 53(1): 94-104.

[19]Dai H, Li W, Yang C, **Yongzheng Sun***. Time and energy costs for consensus of multi-agent networks with undirected and directed topologies. *IEEE Transactions on Network Science and Engineering*, 2021. 8 (4), 3380-3391

[18] D.Chen, **Yongzheng Sun#,** G.Shao, W. Yu,H. Zhang, W. Lin. Coordinating directional switches in pigeon flocks: the role of nonlinear interactions. *Royal Society Open Science*, 2021, 8(9): 210649.

[17] D.Chen, Y.Wang, G.Wu, **Yongzheng Sun*,** W. Yu, Inferring causal relationship in coordinated flight of pigeon flocks. *Chaos,* 2019, 29(11): 113118.

[16]D.Chen, W.Li, X. Liu, W. Yu, **Yongzheng Sun*.** Effects of measurement noise on flocking dynamics of Cucker-Smale sytems. *IEEE Transactions on Circuits and Systems II: Express Briefs*, 2019，67(10):2064-2068

[15]Yongzheng Sun*, Wang Li, Hongjun Shi, Donghua Zhao, Sandro Azaele, Finite-time and fixed-time consensus of multiagent networks with pinning control and noise perturbation, *SIAM Journal on Applied Mathematics.*2019, 79(1), 111–130.

[**14]**H. Dai, **Yongzheng Sun***, W. Li, D. Zhao, Multiplicative measurement noise can facilitate consensus of multiagent networks, *Physical Review E*,2019 100, 022319.

[13]Yongzheng Sun, W. Li, D. Zhao, Realization of consensus of multi-agent systems with stochastically mixed interactions,*Chaos ,*2016,26, 073112.

[12]Radek Erban, Jan Haskovec and **Yongzheng Sun**.A Cucker-Smale model with noise and delay . *SIAM Journal on Applied Mathematics.* 2016, 76, 4, 1535–1557.

[11]Yongzheng Sun*, W. Lin, A positive role of multiplicative noise on the emergence of flocking in a stochastic Cucker-Smale system, *Chaos,* 2015, 25,083118.

[10]Yongzheng Sun*, Y. Wang, D. Zhao, Flocking of multi-agent systems with multiplicative and

independent measurement noises, *Physica A,* 2015, 81-89.
[9]Yongzheng Sun, Wei Lin and Radek Erban*, Time delay can facilitate coherence in self-driven interacting particle systems, *Physical Review E,*2014 90, 062708 .
[8]Yongzheng Sun*,Wang Li, Jiong Ruan, Generalized outer synchronization between complex dynamical networks with time delay and noise perturbation. *Commun Nonlinear Sci Numer Simulat* 2013, 18, 989–998.
[7]Yongzheng Sun*, Wang Li, Donghua Zhao, Outer synchronization between two complex dynamical networks with discontinuous coupling. *Chaos, 2012, 22, 043125*
[6]Yongzheng Sun*, Wang Li, Donghua Zhao, Convergence time and speed of multi-agent systems in noisy environments. *Chaos,* 2012, 22, 043126.
[5]Yongzheng Sun*, Donghua Zhao, Effects of noise on the outer synchronization of two unidirectionally coupled complex dynamical networks. *Chaos,* 2012, 22, 023131.
[4]Yongzheng Sun*, Wang Li, Donghua Zhao,Finite-time stochastic outer synchronization between two complex dynamical networks with different topologies. *Chaos,* 2012, 22, 023152 .
[3]Yongzheng Sun, Donghua Zhao, Jiong Ruan*, Consensus in noisy environments with switching topology and time-varying delay.*Physica A,* 2010, 389 , 4149-4161.
[2]Yongzheng Sun, Jiong Ruan*, Synchronization in coupled time-delayed systems with parameter mismatch and noise perturbation, *Chaos,* 2009, 19 , 043113.
[1]Yongzheng Sun, Jiong Ruan*, Consensus problems of multi-agent systems with noise perturbation, *Chinese Physics B,* 2008, 17: 4137-4141.

Books

Yongzheng Sun, Wang Li, Hongjun Shi, *Stochastic dynamic of complex system*, China University of Mining and Technology Press, 2015.

Selected Conferences and Invited Seminars

- The 7th International Conference on Complex Networks and Their Applications, 11-13 Dec 2018, University of Cambridge, UK
- Applied Mathematics and Nonlinear Dynamics Seminar, 27 Feb 2018, University of Leeds, UK
- The 6th International Conference on Complex Networks and Their Applications, 29 Nov-1 Dec 2017, University of Lyon 2 in Lyon, France
- The 13th Chinese Conference on Complex Networks, 27-29 Nov 2017, Shenzhen China
- Stochastic Dynamical Systems in Biology: Numerical Methods and Applications, 15 Jan-15-Mar 2016, Issac Newton Institute for Mathematical Sciences, Cambridge, UK
- Workshop on Multi-scale methods for stochastic dynamical system in biology, 29 Fe- 4 Mar, 2016 , University of Edinburgh, UK
- Mathematical Biology Seminar, 28 Feb 2014, University of Oxford, UK
- 100th European Study Group with Industry, 01-04 Jul 2014 ,University of Oxford, UK
- 102nd European Study Group with Industry, 26-29 July, 2014, University College Dublin, Ireland
- Workshop on Mathematical Models of Climate Variability, Environmental Change, and Infectious Diseases,29 April - 10 May 2013 ,ICTP,Trieste, Italy
- Spring School on Modelling Tools and Capacity Building in Climate and Public Health, 15 April – 26 April 2013 , ICTP, Trieste, Italy
- The 34th China Control Conference, 28-31 Jul, 2015, Zhejiang University, China
- The 8th Chinese Conference on Complex Networks, 11-14 Oct. 2012, Nanjing, China

- The 31st China Control Conference,22-26 Jun, 2011 , China University of Science and Technology, China
- The 30th China Control Conference, 29 Jun-4 Jul 2010, Shandong University, China
- The 4th Shanghai International Symposium On Nonlinear Sciences and Applications, 27-30 Jun 2010, Fudan University, China
- The 3rd Chinese Conference on Complex Networks, 1-4 Jan 2008, Shanghai, China
- The 2nd Chinese Conference on Complex Networks, 5-7 Jan 2007, Shanghai, China

Acted as Referee/ Reviewer for

SIAM Journal on Applied Mathematics, Physical Review E, Automatic, Scientific Report, Journal of Differential Equation, IEEE Trans. on Automatic Control, Chaos, Nonlinear Dynamics, Physica A, etc.

Teaching Experience and Student Supervision

Undergraduate course taught at CUMT since 2004: *Optimal Control, Linear Algebra, Theory of Probability, Ordinary Differential Equations;*

Graduate course taught at CUMT since 2011: *Stochastic Differential Equations, Network Dynamics, Complex networks and Applications, Nonlinear Analysis;*

PHD and MSC students: Haifeng Dai, Jiaqi Chang, Lingzhi Zhao, Zhicai Ma, Jie Wu, Feng Liu, Pingping Nie, Huihui Zhang, Nan Liang, Rui Xiao, Hongjun Shi, Wang Li.

Honours & Awards

2017- Excellent teachers in teaching, China University of Mining and Technology
2016- 100 Best teachers of China University of Mining and Technology
2014-Excellenct young teacher of China University of Mining and Technology
2012-Excellent supervisors of undergraduate students, China University of Mining and Technology
2012-Award of best paper of Society of Industry and Applied Mathematics of Xuzhou

Mebmbership of Professional Bobies

Vice director of Jiangsu SIAM, Member of The Chinese Mathematical Society, Member of IEEE, Member of Shanghai，Nonlinear Science Society，Committee Member of Network Science of CSIAM, Committee Member of Mathematical Biology and Life Science of CSIAM.

Research Interests

My research interests focus on the mathematical modelling of complex systems. In general, I have a deep interest in Mathematical Biology, Complex networks, Collective Behavior, Chaos , Stability of Stochastic Differential Equations. The aim is to reveal the fundamental mechanism of noise in poorly understood complex systems.

Major Collaborations

Prof. Radek Erban, Mathematical Biology, University of Oxford, UK
Prof. Celso Grebogi, Network Controlling, University of Aberdeen, UK
Prof. Ying-Cheng Lai, Network Controlling, Arizona State University, USA
Dr. Sandro Azaele, Stability of Ecosystems, University of Leeds, UK
Prof. Jiong Ruan, Nonlinear Dynamics, Fudan University,China
Prof. Wei Lin, Collective Dynamics of Complex Network, Fudan University, China
Dr. Donghua Zhao, Nonlinear Dynamics, Fudan University, China