

Curriculum Vitae—Bin Liu

1 Contact Address

Dr. Bin Liu
Queen Elizabeth II Fellow,
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2 Education

Ph.D. of System Science and Engineering
Department of Control Science and Engineering,
Huazhong University of Science and Technology (HUST), Wuhan, P.R.China
Graduated: June 2003.

(Supervisor: Prof. Xinzhi Liu, Prof. Xiaoxin Liao.)

Master of Basic Mathematics (Lie Algebra)
Dept. of Mathematics,
East China Normal University, Shanghai, P.R.China
Graduated: June 1993.

(Supervisor: Prof. Sen Qiu.)

College Study
Dept. of Mathematics, Hunan LuoDi Normal College, Hunan, P.R.China
Graduated: June 1987.

3 Research Interests

- (i) Stability and control hybrid system (impulsive systems, switching systems, etc.), and stochastic systems;
- (ii) Dynamical analysis (synchronization, consensus, etc.) and control for complex dynamical systems and hybrid networks;
- (iii) Quantum systems and quantum networks (a new starting research topic for me);
- (iv) Lie algebra.

4 Work Experiences

Queen Elizabeth II Fellowship (01-2008—present),

Research Fellow (10-2006—12-2007):

School of Engineering,

The Australian National University, Canberra, ACT 0200, Australia

(Supervisor: Prof. Hill J David)

Post Doctoral Fellow (07-2005—09-2006):

Department of Electrical and Computer Engineering,

University of Alberta, Edmonton, Alberta,

Canada T6G 2V4

(Supervisor: Prof. Horacio J. Marquez)

Research Fellow (08-2004—05-2005), Researcher Assistant(01-2003—04-2003):

Department of Applied Mathematics, The Hong Kong Polytechnic University, Hong Kong, China;

(Supervisor: Prof. Kok Lay Teo)

Post-Doctor (06-2003—05-2005):

Department of Control Science and Engineering,

Huazhong University of Science and Technology, Wuhan, China

(Supervisor: Prof. Xinzhi Liu)

Professor (09-2004); Associate Professor (07-2001—08-2004), Lecture (09-1995—06-2001):

Department of Information and Computation Science, College of Sciences,

Hunan University of Technology, Zhuzhou, Hunan, China

- From March 2010 to present, I am the organizer of Seminar for System and Control Group in Research School of Engineering, ANU. There's often a seminar every week.

5 Editors of Journals

12-2006–present: Associate Editor of *The Journal of the Franklin Institute*.

01-2009–present: Associate Editor of *Mathematical Problems in Engineering*.

09-2007–present: Associate Editor of *Dynamics of Continuous, Discrete and Impulsive Systems (Series B)*.

06-2005–present: Reviewer of *Mathematical Reviews* of USA.

6 Academic Awards

1. Queen Elizabeth II Fellowship Award from Australian Research Council (2007).

From the ARC report, the success rate of QEII is 15.6 percent in the year 2007.

2. The paper "Bin Liu, Xinzhi Liu, Guanrong Chen, Robust impulsive synchronization of uncertain dynamical networks, IEEE Trans. Circuits Syst.-I: Regular Papers, vol.52(7), 1431-1441, 2005." got the first Prize for Natural Science Papers of Hunan Province in 2008.
3. Best Doctoral Dissertation Award, Hubei Province, China (2004).
4. Ten Best Researchers of PhD and Master candidates at Huazhong University of Science and Technology (2003).

7 Research Grants

1. The Australian Research Council Discovery Project (DP0881391) "Dynamic Analysis and Control for Hybrid Systems and Networks", (01-2008—01-2013, *with Prof. David J. Hill*)
2. The Australian Research Council (DP074156) "Dynamics and Security Control of Complex Networks", (*participation, Prof. David J. Hill in charge of*);
3. The National Natural Science Foundation of China "Research on Input-to-State Stability of Impulsive Hybrid Systems" under Grant No.60874025, (*in charge of*)
4. The Post Doctoral Foundation of China under Grant No.2003034485, No.20060390247 (the first prize supporting); (*in charge of*)
5. The Excellent Young Program of the Education Department of Hunan Province under Grant No.04B068; (*in charge of*)
6. NSERC-Canada; (*participation, Prof. H.J. Marquez in charge of*)
7. The Hong Kong Research Grants Council under the CERG grant No: PolyU 5197103E, (*participation, Prof. K.L. Teo in charge of*)

8 Publications

8.1 Main Journal Papers

- [1] Bin Liu, David J. Hill, Stability and impulsive stabilization for delayed discrete hybrid systems via hybrid time, submitted to IEEE Trans on Automatic Control, (Received positive comments as full paper, Aug. 20, 2010).
- [2] Bin Liu, David J. Hill, Stability and ISS for a class of hybrid dynamical systems, submitted to Automatica, (Received positive comments as full paper, Dec., 2009.)
- [3] Bin Liu, Jian-ping Li, Synchronization and adaptive anti-synchronization for Lorenz systems under channel noise with applications to secure communications, submitted to Automatica, (under review as full paper), 2010.

- [4] Jing Yao, F. Lin, Bin Liu, H_∞ control for stochastic stability and disturbance attenuation in a class of networked hybrid systems, submitted to IET Control Theory & Applications, (under review), 2010.
- [5] Bin Liu, Tao Liu, and David J. Hill, Multi-consensus of discrete-time complex dynamical networks via delayed impulsive distributed control, (prepare for submission to IEEE Trans on Automatic Control as full paper, 2011.)
- [6] Bin Liu, ISS-type comparison principles and ISS for discrete-time dynamical networks with time-delays, (prepare for submission, 2010.)
- [7] Bin Liu, David J. Hill, Decomposable dissipativity and stability for discrete-time switched systems, *IEEE Trans on Automatic Control*, (Accepted, Jan. 28, 2011).
- [8] Bin Liu, David J. Hill, Impulsive consensus for complex dynamical networks with non-identical nodes and coupling time-delays, *SIAM Journal on Control and Optimization*, (Accepted, Dec.3, 2010.)
- [9] Bin Liu, Stability of solutions for stochastic impulsive systems, *IEEE Trans on Automatic Control*, vol. 53(9), pp.2128-2133, 2008. (*SCI citation: 9*)
- [10] Bin Liu, Horacio J. Marquez, Controllability and observability for a class of switching impulsive systems, *IEEE Trans on Automatic Control*, vol. 53(10), pp.2360-2366, 2008.
- [11] Bin Liu, Horacio J. Marquez, Razumikhin-type stability theorems for discrete delay systems, *Automatica*, vol. 43(7), pp.1219-1225, 2007.
- [12] Bin Liu, David J. Hill, Uniform stability and ISS of discrete-time impulsive hybrid systems, *Nonlinear Analysis: Hybrid Systems*, vol.4(2010), pp.319-333, 2010. (invited paper)
- [13] Bin Liu, David J. Hill, Input-to-state stability for discrete delay systems via Razumikhin technique, *Systems & Control Letters*, vol.58, pp.567-575, 2009.
- [14] Bin Liu, David J. Hill, Jian Yao, Global uniform synchronization with an estimated error bound, *IEEE Trans on Circuits Syst.-I. Regular Papers*, vol.56(12), pp.2689-2702, 2009.
- [15] Bin Liu, David J. Hill, Comparison principle and stability of discrete impulsive hybrid systems, *IEEE Trans on Circuits Syst.-I. Regular Papers*, vol.56(1), pp.233-245, 2009.
- [16] Bin Liu, Horacio J. Marquez, Uniform stability of discrete delay systems and synchronization of discrete delay dynamical networks via Razumikhin technique, *IEEE Trans on Circuits Syst.-I. Regular Papers*, vol.55(9), pp.2795-2805, 2008.
- [17] Bin Liu, Xinzhi Liu, Guanrong Chen, Robust impulsive synchronization of uncertain dynamical networks, *IEEE Trans. Circuits Syst.-I: Regular Papers*, vol.52(7), 1431-1441, 2005. (*SCI citation: 60*)
- [18] Bin Liu, Xinzhi Liu, Robust stability of discrete impulsive systems, *IEEE Trans on Circuits Syst.-II*. vol. 54(5), pp.455-459, 2007. (*SCI citation: 18*)
- [19] Bin Liu, David J. Hill, Uniform stability of large-scale delay discrete impulsive systems, *International Journal of Control*, vol.82(2), pp. 228-240, 2009.

- [20] Bin Liu, Horacio J. Marquez, Quasi-exponential ISS for discrete impulsive hybrid systems, *International Journal of Control*, vol.80(4), pp. 540-554, 2007. (*SCI citation: 16*)
- [21] Bin Liu, Xinzhi Liu, Kok Lay Teo, Razumikhin-type theorems on exponential stability of impulsive delay systems, *IMA J. Appl. Math.*, vol.71, pp.47-61, 2006. (*SCI citation: 16*)
- [22] Bin Liu, David J. Hill, Guanrong Chen, Synchronization error and uniform synchronization with an error bound for chaotic systems, *Int. J. Bifur. Chaos*, vol. 18(11), pp.3341-3354, 2008.
- [23] Bin Liu, Kok Lay Teo, Xinzhi Liu, Robust exponential stabilization for large-scale uncertain impulsive systems with coupling time delays, *Nonlinear Analysis*, vol.68, pp.1169-1183, 2008.
- [24] Bin Liu, Kok Lay Teo, Xinzhi Liu, Optimal control and robust stability of uncertain impulsive dynamical systems, *Asian Journal of Control*, vol. 10(3), pp.314-326, 2008.
- [25] Bin Liu, Xinzhi Liu, Uniform stability of discrete impulsive systems, *International Journal of Systems Science*, vol.39(2), pp.181-192, 2008.
- [26] Bin Liu, Kok Lay Teo, Xinzhi Liu, Global synchronization of dynamical networks with coupling time-delays. *Physics Letters A*, vol. 368, pp.53-63, 2007.
- [27] Bin Liu, Guanrong Chen, Kok Lay Teo, Xinzhi Liu, Robust global exponential synchronization of general Lur'e chaotic systems subject to impulsive disturbances and times delays. *Chaos, Solitons and Fractals*, vol. 23 (5), 1629-1641, 2005. (*SCI citation: 20*)
- [28] Bin Liu, Xinzhi Liu, Robust stability of uncertain impulsive dynamical systems, *J. Math. Anal. Appl.*, vol.290, pp.519-533, 2004. (*SCI citation: 23*)
- [29] Bin Liu, Xinzhi Liu, Stability and robust stability of quasi-linear impulsive hybrid dynamical systems, *J. Math. Anal. Appl.*, vol. 283, pp.416-430, 2003. (*SCI citation: 27*)
- [30] Bin Liu, Xinzhi Liu, Kok Lay Teo, Feedback stabilization of dissipative impulsive dynamical systems, *Information Sciences*, vol.177(7), pp.1663-1672, 2007.
- [31] Lamei Yan, Bin Liu, Stabilization with optimal performance for dissipative discrete-time impulsive hybrid systems, *Advances in Difference Equations*, vol.2010, pp.1-14, 2010.
- [32] Ming Lei, Bin Liu, Robust impulsive synchronization of discrete dynamical networks, *Advances in Difference Equations*, vol.2008, pp.1-17, 2008.
- [33] Bin Liu, Fangyi Liu, Robustly global exponential stability of time-varying linear impulsive systems with uncertainty, *Nonlinear Dynamics and Systems Theory*. vol.7(2), pp.187-195, 2007.
- [34] Bin Liu, Xinzhi Liu, Xiaoxin Liao, Existence and uniqueness and stability of solutions for stochastic impulsive systems, *Journal of Systems Science and Complexity*, Vol.20(1),pp.149-158, March, 2007.

- [35] Bin Liu, Xinzhi Liu, Robust global exponential stability and estimate of decay rate of uncertain linear impulsive systems with time-delay, *Rocky Mountain J. Math.*, vol.36 (2), pp.615-636, 2006.
- [36] C. Feng, Bin Liu, Existence and stability of periodic solutions to time-varying cell neural networks with delays, *Dynamics of Continuous, Discrete and Impulsive Systems, (Series A)*. vol. 13a(5), pp.575-586, 2006.
- [37] Bin Liu, Xinzhi Liu, Xiaoxin Liao, Robust global exponential stability of uncertain impulsive systems, *Acta Mathematica Scientia*, vol. 25(1), Ser. B, pp.161-169, 2005.
- [38] Yonghong Long, Bin Liu, Robust optimality of uncertain impulsive dynamical systems, *DCDIS, (Series B-Applications and Algorithms)*, vol. 10, pp.770-775, 2005.
- [39] Huayou Wang, Bin Liu, Xinzhi Liu, Optimization problems for switching systems with impulsive control, *Journal Control Theory and Applications*, vol.2, 2005.
- [40] Yong Hong Long, Min Wu, Bin Liu, Robust impulsive synchronization of linear discrete dynamical networks, *Journal Control Theory and Applications*, vol.3, 2005.
- [41] Bin Liu, Xinzhi Liu, Xiaoxin Liao, Globally exponential stability of time-varying delays neural networks via Razumikhin technique, *Dynamics of Continuous, Discrete and Impulsive Systems (Series B)*, vol. 11(6), pp.783-797, 2004.
- [42] Bin Liu, Xinzhi Liu, Xianzhong Duan, Impulsive global synchronization of discrete chaotic systems, *Dynamics of Continuous, Discrete and Impulsive Systems (Series B)*, vol.11a, pp.53-60, 2004.
- [43] Bin Liu, Jian Yao, Jinqing Fang, Xinzhi Liu, Impulsive stabilization of uncertain dynamical systems and chaos control, *Chinese Journal of Electronics*, vol.13(2), pp.272-277, 2004.
- [44] Bin Liu, Xinzhi Liu, Xiaoxin Liao, Robust dissipativity for impulsive dynamical systems, *Math. Problem in Engineering*, vol.2003(3), pp.119-128, 2003.
- [45] Bin Liu, Xinzhi Liu, Robust H-stability for uncertain impulsive Hopfield NN, *Dynamics of Continuous, Discrete and Impulsive Systems (Series B)*, vol.1, pp:384-389,2003.
- [46] Bin Liu, Xinzhi Liu, Xiaoxin Liao, Robust H-stability for Hopfield neural networks with impulsive effects and design of impulsive controller for Hopfield neural networks, *Journal of Control Theory and Applications*, vol.20(2), pp.168-172, 2003.
- [47] Bin Liu, Xinzhi Liu, Xiaoxin Liao, Robust dissipativity and feedback stabilization for interval linear impulsive dynamical systems, *Journal of Control Theory and Applications*, vol.20(5), pp.667-672, 2003.
- [48] Bin Liu, Xinzhi Liu, Study of robust uniform asymptotical stability for uncertain impulsive delay systems, *System Engineering and Electronic Technology*, vol. 14(3), pp:63-66, 2003.
- [49] Bin Liu, Xinzhi Liu, Xiaoxin Liao, Chaotic synchronization of general Lur'e systems, *Acta Automatica Sinica*, vol.30(1), pp.155-160, 2004. (in Chinese)
- [50] Bin Liu, Xinzhi Liu, Xiaoxin Liao, Exponential stability of uncertain impulsive systems, *Journal of Systems Engineering*, vol.19(2), pp.111-116, 2004. (in Chinese)

- [51] Bin Liu, Xinzhi Liu, Xiaoxin Liao, An M-matrix approach to the exponent synchronization of Lur'e chaotic systems, *System Engineering and Electronic Technology*, vol.25(3), pp.326-329, 2003. (in Chinese)

8.2 Conference Papers (recent 5 years)

- [52] Bin Liu, David J. Hill, Stabilization for decomposable dissipative discrete-time switched systems, submitted to the 18th World Congress of IFAC, Milan, Italy, 2011.
- [53] Bin Liu, David J. Hill, Yunlian Sun, Exponential input-to-state stability for hybrid dynamical networks via impulsive interconnection, Proc. 49th IEEE Conf. Decision Control, Atlanta, USA, December 15-17, 2010, pp.673-678.
- [54] Bin Liu, David J. Hill, Tao Liu, Synchronization and consensus of discrete CDN via delayed impulsive control, Preprints of the 8th IFAC Symposium on Nonlinear Control Systems, Bologna, Italy, September 1-3, 2010, pp.143-148. (NOLCOS 2010)
- [55] Bin Liu, Qiong Tang, Shen-ping Xiao, Hong Bing Zeng, Exponential ISS properties for impulsive interconnected systems, Proc. 29th Chinese Control Conf., July 29-31, 2010, Beijing, China, pp.1506-1510.
- [56] Bin Liu, David J. Hill, Kok Lay Teo, Input-to-state stability for a class of hybrid dynamical systems via hybrid time approach, Proc. 48th IEEE Conf. Decision Control, Shanghai, P.R. China, December 16-18, 2009, pp.3926-3931.
- [57] Bin Liu, David J. Hill, Impulsive consensus control for complex dynamical networks with non-identical nodes and coupling time-delays, Proc. 47th IEEE Conf. Decision Control, Cancun, Mexico, 2008, pp.2258-2263.
- [58] Bin Liu, David J. Hill, Stability of discrete impulsive hybrid systems via comparison principle, Proc. 17th World Congress of IFAC, Seoul, Korea, July 6-11, 2008, pp: 11520-11525.
- [59] Bin Liu, David J. Hill, Robust stability of complex impulsive dynamical systems, Proc. 46th IEEE Conf. Decision Control, New Orleans, USA, 2007, pp.103-108.
- [60] Bin Liu, David J. Hill, Optimal robust control for uncertain impulsive systems, Proc. 26th Chinese Control Conf., July 26-31, 2007, Zhangjiajie, Hunan, China, pp.381-385.