

Prof. RNDr. Sergej Čelikovský, CSc.

1984 MSc., Moscow State University, Faculty of Numerical Mathematics and Cybernetics, Dept. of Optimal Control.
1985 RNDr. degree (Rerum Naturalium Doctoris), Mathematical and Physical Faculty, Charles University in Prague.
1989 CSc. degree (Candidate of Sciences – corresponds to Ph.D degree), Czechoslovak Academy of Sciences.
1996 **The Netherlands:** Research Associate University of Enschede, Dept. of Mathematics, 3 months.
1998 **Hong Kong:** Research Associate Chinese U. of Hong Kong, Dept. of Mech. Eng. and Automation, 6 months.
1998-2000 **Mexico:** Visiting Professor CINVESTAV del I.P.N. (Center for Research and Advanced Studies of the National Polytechnic Institute), 2 years.
2003- Associate member of the Centre for Chaos and Complex Networks, City University of Hong Kong.
2004- Head of the Dept. of Control Theory, Inst. of Info. Theory and Automation, Acad. of Sci. of the CR.
2005-2009 Associate Editor of *IEEE Transaction on Automatic Control*.
2004- Member of Editorial Board of the journal "*Kybernetika*".
2010-2011 Guest Associate Editor of *Int. J. of Bifurcation and Chaos*.
2011- Associate Editor of the journal "*Journal of Cybernetics and Physics*".
2011- Full Professor at the Czech Technical University in Prague, Faculty of EE.
2011- SICE 2011 Award for Outstanding Paper (SICE - Society of Instrument and Control Engineers, Japan).
2011-2015 Member of the panel of the Czech Science Foundation No. P102, "*Cybernetics and Information Processing*".
2012- Associate Editor of the journal "*International Journal of Bifurcation and Chaos*".
2013-2015 Associate Editor of the journal "*IET Control Theory and Applications*".
2015- Member of Scientific Board of the *Faculty of Applied Sciences, University of West Bohemia*.
2013- Associate Editor of the journals: "*Journal of the Franklin Institute*", "*Control Theory and Technology*".
2015- **Subject Editor** of the journal: "*Journal of the Franklin Institute*".
2017- Evaluator for the National Office for Accreditations of Universities
2017- **Awarded the EEA Demonstrator Paper Prize at the IFAC World Congress 2017 in Toulouse.** This special demonstrator prize is funded by Club EEA (French association of professors and researchers in electrical and information sciences).

Expertise: Nonlinear Systems, mechanical systems and robotics, complex systems and networks, chaotic systems, optimal control and optimization, robust control, stabilization and estimation, modelling and control of biosystems.

Lecture courses and PhD students: Modern Nonlinear Control and Advanced Nonlinear Control (both at CINVESTAV, Mexico, 1998-2000), Nonlinear Systems, Master study, 2003-now. Nonlinear Systems – advanced PhD course 2003-now. Both latter courses at Department of EE, Czech Technical University in Prague. **Supervisor of 5 successfully defended PhD students, currently supervising 2 PhD students.**

Scientific Societies, IPC's of recognized international scientific events:

- Member (1996-2003), Senior member (2003-now) of IEEE and IEEE CSS
- Member of the IFAC TC on Nonlinear Systems 1997-now and the of IFAC TC on Robust Control 2004-2008
- Chairman of the Action Group on Chaos Control and Synchronization of the TC CACSD IEEE 2004-now
- Subarea chair of IPC of IFAC Symposium NOLCOS 2007, Pretoria, South Africa
- Subarea chair of IPC of IFAC Symposium NOLCOS 2010, Bologna, Italy
- IPC member of the 2nd IFAC Conference on Chaos Control, London, 2009
- IPC member of the International Conference on Dynamics, Vibration and Control 2010, Hangzhou, China.
- IPC member of the 5th International Conference on Physics and Control (PhysCon 2011), Leon, Spain.
- IPC member of the 5th Asia-Pacific Workshop on Chaos Control and Synchronization, Kunming, 2010, China. **Keynote speaker at this conference.**
- **2011-now Member of General Assembly of the European Union Control Association**
- IPC member of IFAC Symposium NOLCOS 2013, Toulouse, France.
- IPC member of 2013 Physcon Conference, Sain Luis Potosi, Mexico. **Keynote speaker at this conference.**

- IPC member of the 1st International Conference on Sensor Network Security Technology and Privacy Communication System. Harbin, 2013, China. *Keynote speaker at this conference.*
- IPC member of the 7th International Conference on Mathematical Modelling, 2014, Yakutsk, Russia. *Keynote speaker at this conference.*
- IPC member *IFAC 2017 Congress 2017, Toulouse, France*
- IPC member *IFAC Conference on Chaos Control 2018, Eindhoven, Netherlands*
- IPC member *IFAC MICNON 2018 Conference, Guadalajara, Mexico.*

Selected publications

Total publications statistics 1984-2017: 54 papers in impacted journals registered by ISI Web of Knowledge, 1 monograph, 2 monograph chapters, 1 monograph editorship, over 100 papers in proceedings of international peer-reviewed conferences. 1680 citations in ISI Web of Knowledge and its H-index: 14.

- Čelikovský Sergej: On the global linearization of bilinear systems, *Systems and Control Letters*, 15 (1990), 433-439.
- Čelikovský Sergej: On the global linearization of nonhomogenous bilinear system. *Systems and Control Letters*, 18 (1992), 397-402.
- Čelikovský Sergej: On the stabilization of bilinear systems, *Systems and Control Letters*, 21(1993), 503-510.
- Vaněček A. and S. Čelikovský: Chaos synthesis via root locus, *IEEE Trans. on Circ. and Systems, I: Fundamental Theory and Applications*, 41 (1994), 59-60.
- Čelikovský Sergej and A. Vaněček: Bilinear systems and chaos, *Kybernetika*, 30 (1994), pp. 403-424.
- Vaněček A. and S. Čelikovský: *Control Systems: From linear analysis to synthesis of chaos*. Prentice Hall Int., London-New York-Tokyo 1996.
- Čelikovský Sergej and H. Nijmeijer: Equivalence of nonlinear systems to triangular forms: the singular case. *Systems and Control Letters*, 27 (1996), 135-144.
- Čelikovský Sergej and H. Nijmeijer: On the relation between local controllability and stabilizability of nonlinear systems. *IEEE Transactions on Automatic Control*, AC-42, 1997, 90-94.
- Liu Xiaoping and S. Čelikovský: Feedback Control of Affine Nonlinear Singular Control Systems. *International Journal of Control*, 68 (1997), no. 4, 753-774.
- Čelikovský Sergej and E. Aranda-Bricaire: Constructive nonsmooth stabilization of triangular systems, *Systems and Control Letters*, 36 (1999), 21-37.
- Čelikovský Sergej.: Local stabilization and controllability of a class of nontriangular nonlinear systems, *IEEE Transactions on Automatic Control*, 45 (2000), 1909-1913.
- Čelikovský Sergej and G. Chen: On a generalized Lorenz canonical form of chaotic systems, *International Journal of Bifurcations and Chaos*, vol. 12 (2002), 1789-1812.
- Lu J., G. Chen, D. Cheng and S. Čelikovský: Bridge the gap between the Lorenz and the Chen system, *Int. J. of Bifurcations and Chaos*, Vol. 12 (2002), 2917-2926.
- Ramos L., S. Čelikovský and V. Kucera: Generalized output regulation problem for a class of systems with nonautonomous exosystem, *IEEE Transactions on Automatic Control*, 49 (2004), 1737-1742.
- Čelikovský S. and G. Chen: Secure synchronization of a class of chaotic systems form a nonlinear observer approach, *IEEE Transactions on Automatic Control*, 50 (2005), 76-81.
- Zhou J., G. Chen and S. Čelikovsky: On LaSalle's Invariance Principle and Its Application to Robust Synchronization of General Vector Lienard Equations, *IEEE Trans. on Automatic Contr.*, 50 (2005), 6, 869-874.
- Čelikovský S., Guanrong C.: On the generalized Lorenz canonical form. *Chaos Solitons and Fractals*, 26 (2005), 5, 1271-1276.
- Reháč B., Čelikovský S., Papáček Š.: Model for Photosynthesis and Photoinhibition: Parameter Identification Based on the Harmonic Irradiation 0_2 Response Measurement, *IEEE Transactions on Automatic Control*, vol.53, 1 (2008), p. 101-108.
- Reháč B., Čelikovský S.: Numerical method for the solution of the regulator equation with application to nonlinear tracking, *Automatica*, vol.44, 5 (2008), 1358-1365.
- Chen G., Čelikovský S., Zhou J.: On a functional LaSalle principle with application to chaos synchronization, *International Journal of Bifurcation and Chaos*, 19 (2009), 4253-4261 (2009)

- Čelikovský S., Š. Papáček, A. Cervantes-Herrera, J. Ruiz-Leon: Singular perturbation based solution to optimal microalgal growth and its infinite time horizon analysis. *IEEE Trans. Automatic Contr.*, 55 (2010), 767-772.
- Anderle M., Čelikovský S., Henrion D., Zikmund Jiří : Advanced LMI based analysis and design for Acrobot walking, *International Journal of Control*, 83 (2010), p. 1641-1652.
- Čelikovský Sergej, Lynnyk Volodymyr: Desynchronization Chaos Shift Keying Method Based on the Error Second Derivative and its Security Analysis, *International Journal of Bifurcation and Chaos*, vol.22 (2012).
- Beran Zdeněk, Čelikovský Sergej: Generalized Semiflows and Chaos in Multi-valued Dynamical Systems, *International Journal of Modern Physics B*, vol.26 (2012).
- Beran Z., Čelikovský S.: Chaos on hyperspace, *International J.of Bifurcation and Chaos* vol.23, 5 (2013).
- Beran Zdeněk, Čelikovský Sergej: Application of functional derivatives to analysis of complex systems , *Journal of the Franklin Institute-Engineering and Applied Mathematics*, vol.350, 10 (2013), p. 2982-2993.
- Čelikovský Sergej, Lynnyk Volodymyr, Chen G.: Robust synchronization of a class of chaotic networks , *Journal of the Franklin Institute-Engineering and Applied Mathematics* , vol.350, 10 (2013), p. 2936-2948.
- García-Martínez M., Campos-Cantón I., Campos-Cantón E., Čelikovský Sergej: Difference map and its electronic circuit realization, *Nonlinear Dynamics*, vol.74, 3 (2013), p. 819-830.
- Fernández-Anaya G., Campos-Cantón E., Čelikovský Sergej, Loria A.: Preservation of relevant properties of interconnected dynamical systems over complex networks, *Journal of the Franklin Institute-Engineering and Applied Mathematics*, vol.350, 10 (2013), p. 2849-2852.
- Pčolka M., Čelikovský Sergej: Numerical aspects of optimal control of penicillin production, *Bioprocess and Biosystems Engineering* vol.37, 1 (2014), p. 71-81.
- García-Martínez M., Ontanon-García L.J., Campos-Cantón E., Čelikovský Sergej: Hyperchaotic encryption based on multi-scroll piecewise linear Systems, *Appl. Mathematics and Comput.* vol.270, 1 (2015), p. 413-424.
- Gómez-Gutiérrez D., Čelikovský Sergej, Ramírez-Trevino A., Castillo-Toledo B.: On the observer design problem for continuous-time switched linear systems with unknown switchings, *Journal of the Franklin Institute-Engineering and Applied Mathematics* vol.352, 4 (2015), p. 1595-1612.
- Beran Z., Čelikovský S.: Analytical-Algebraic Approach to Solving Chaotic System, *International Journal of Bifurcation and Chaos*, vol.26, 3 (2016).
- Pčolka M., Žáčková E., Robinett R., Čelikovský Sergej, Šebek M.: Bridging the gap between the linear and nonlinear predictive control: Adaptations fo refficient building climate control, *Control Engineering Practice*, vol.53, 1 (2016), p. 124-138
- Čelikovský Sergej, Lynnyk Volodymyr: Message Embedded Chaotic Masking Synchronization Scheme Based on the Generalized Lorenz System and Its Security Analysis, *International Journal of Bifurcation and Chaos*, vol.26, 8 (2016).
- Hengster-Movric K., Šebek M., Čelikovský Sergej: Structured Lyapunov functions for synchronization of identical affine-in-control agents-Unified approach, *Journal of the Franklin Institute-Engineering and Applied Mathematics*, vol.353, 14 (2016), p. 3457-3486.
- Mushfiqul Alam and Sergej Čelikovský: On the internal stability of non-linear dynamic inversion: application to flight control, *IET Control Theory & Applications*, 12 (2017), p. 1849-1861.
- Gómez-Gutiérrez D., Renato Vázquez C., Čelikovský S., Ramírez-Treviño A., Castillo-Toledo B.: On the distinguishability and observer design for single-input single-output continuous-time switched affine systems under bounded disturbances with application to chaos-based modulation, *European Journal of Control*, 34 (2017), pp. 49-58.
- Pčolka M., Čelikovský Sergej: Production-process optimization algorithm: Application to fed-batch bioprocess , *Journal of the Franklin Institute-Engineering and Applied Mathematics*, 354 (2017), pp.: 8529-8551.
- Čelikovský Sergej, Torres-Munoz J. A., Dominguez-Bocanegra A. R.: Adaptive high gain observer extension and its application to bioprocess monitoring, *Kybernetika*, 54 (2018), pp. 155-174.
- Pčolka M., Žáčková E., Čelikovský Sergej, Šebek M.: Toward a Smart Car: Hybrid Nonlinear Predictive Controller With Adaptive Horizon, *IEEE Transactions on Control Systems Technology*, to appear.
- Dolinský Kamil, Čelikovský Sergej: Application of the Method of Maximum Likelihood to Identification of Bipedal Walking Robots, *IEEE Transactions on Control Systems Technology*, to appear.