

## References

- Arnold, V.I.: *Mathematical Methods of Classical Mechanics* (original issue in Russian by “Nauka”), Hungarian translation issued by Műszaki Könyvkiadó Budapest, Hungary 1985.
- Arnold, V.I.: *Mathematical Methods of Classical Mechanics*, Springer-Verlag 1989, [ISBN 0-387-96890-3]
- Asada, H., and Slotine, J.-J.E.: *Robot Analysis and Control*, John Wiley & Sons, New York, 1986.
- Baudin<sup>1</sup>, M., Couvert<sup>1</sup>, V., & Steer<sup>2</sup>, S.: *Optimization in SCILAB*, <sup>1</sup>Scilab Consortium, <sup>2</sup>INRIA Paris - Rocquencourt, July 2010, [www.scilab.org](http://www.scilab.org).
- Boyd, S.: *Introduction to Linear Dynamical Systems*, Lecture Notes for EE263, Stanford University, 2007.
- Callen, H.B.: *Thermodynamics and an Introduction to Thermostatistics*, 2nd Edition, John Wiley & Sons Inc., 1985.
- Che, Yan-Qiu, Wang, Jiang, Chan, Wai-Lok, and Tsang, Kai-Ming: *Chaos synchronization of coupled neurons under electrical stimulation via robust adaptive fuzzy control*. *Nonlinear Dyn*, Vol 61: pp. 847–857, 2010 (DOI 10.1007/s11071-010-9691-9).
- COST 346 - Final Report, 2005.
- Davies, B.: *Integral Transforms and Their Applications*, Springer Verlag (Hungarian translation: *Integráltranszformációk és alkalmazásaik*, Műszaki Könyvkiadó, Budapest, 1983.)

- de Wit, C. Canudas, Ollson, H., Astrom, K.J., and Lischinsky, P.: A new model for control of systems with friction. *IEEE Trans. on Automatic Control* 40(3), pp. 419–425, 1995.
- Duffing oscillator on Scholarpedia  
[http://scholarpedia.org/article/Duffing\\_oscillator](http://scholarpedia.org/article/Duffing_oscillator)
- Duffing equation - Wikipedia, the free encyclopedia  
[http://en.wikipedia.org/wiki/Duffing\\_equation](http://en.wikipedia.org/wiki/Duffing_equation)
- Emelyanov, S.V., Korovin, S.K., and Levantovsky, L.V.: Higher order sliding regimes in the binary control systems, *Soviet Physics, Doklady*, 1986, Vol. 31, 291–293.
- Emission factors from the model PHEM for the HBEFA Version 3, 2009.
- Faddeeva, V.N.: The Jordan Canonical Form, §4 in *Computational Methods of Linear Algebra*, New York: Dover, pp. 49–54 and 235, 1958.
- Field, R.J., Körös E., and Noyes R.M.: *J. Am. Chem. Soc.* Vol. 94, pp. 8649–8664, 1972.
- Frazer, R.A., Duncan, W.J., and Collar, A.R.: *Collinearity Transformation of a Numerical Matrix to a Canonical Form* §3.16 in *Elementary Matrices and Some Applications to Dynamics and Differential Equations*, Cambridge, England: Cambridge University Press, pp. 93–95, 1955.
- Glass, L.: Chaos in neural systems. In: Arbib, M. (ed.) *The Handbook of Brain Theory and Neural Networks*, pp. 186–189. MIT, Cambridge, 1995.
- Golub, G.H. and Van Loan, C.F.: *Matrix Computations*, 3rd ed. Baltimore, MD: Johns Hopkins University Press, p. 317, 1996.
- Hall, G.G.: *Alkalmazott csoportelmélet (Applied Group Theory)*, in Hungarian, Műszaki Könyvkiadó, Budapest, 1975. ISBN 10 0805 3.
- Halmos, P.R.: *Finite-Dimensional Vector Spaces*, 2nd ed. Princeton, NJ: Van Nostrand, p. 686, 1958.
- Határ, Gy.: *Héliáne (fiction in Hungarian)*, Magyar Téka, Budapest, Hungary, 1948.
- Yaghoub Heidari, Soheil Salehi Alashti, Rouhollah Maghsoudi: Chaos Synchronization of two Uncertain Chaotic System Using Genetic Based Fuzzy Adaptive PID Controller, *The Journal of Mathematics and Computer Science* Vol.1 No.4 pp. 273–286 (2010)
- Hodgkin, A.L., Huxley, A.F.: A quantitative description of membrane current and its application to conduction and excitation in nerve. *J. Physiol. (Lond.)* Vol. 117, pp. 500–544, 1952.

- Hosseini-Suny, K., Momeni, H. and Janabi-Sharifi, F.: Model Reference Adaptive Control Design for a Teleoperation System with Output Prediction, *J Intell Robot Syst*, DOI 10.1007/s10846-010-9400-4, pp. 1–21, 2010.
- Hoogendoorn, S.P. & Bovy, P.H.L.: State-of-the-art of vehicular traffic flow modelling, *Proceedings of the Institution of Mechanical Engineers, Part I: Journal of Systems and Control Engineering*, 215(4) pp. 283-303, 2001.
- Huang, Deng-shi , Li, Hong-qing: *Theory and Method of the Nonlinear Economics*, Publishing [M]. Chengdu: House of Sichuan University ,1993. (in Chinese)
- Jurdjevic, V.: *Geometric control theory*, in *Cambridge Studies in Advanced Mathematics 52* (Eds.: W. Fulton, D.J.H. Garling, K. Ribet, & P. Walters), Part one: Reachable sets and controllabilty, p. 1, Cambridge University Press, 1997
- Kondepudi, D., Prigogine, I.: *Modern Thermodynamics*, John Wiley & Sons, Chichester, 1998;
- Kwakernaak, Huibert and Sivan, Raphael: *Linear Optimal Control Systems*. First Edition. Wiley-Interscience, 1972, ISBN 0-471-511102.
- Laub, Alan J.: *A Schur Method for Solving Algebraic Riccati Equations*  
<http://libraries.mit.edu/docs>
- Levant, A.: Arbitrary-order sliding modes with finite time convergence, *Proceedings of the 6th IEEE Mediterranean Conference on Control and Systems*, June 9–11, 1998, Alghero, Sardinia, Italy.
- Lorenz, E.N.: Deterministic nonperiodic flow, *J. Atmos. Sci.* Vol. 20 No. 2, pp. 130–141, 1963.
- Lyapunov, A. M.: *A general task about the stability of motion* (in Russian), PhD Thesis, 1892.
- Lyapunov, A. M.: *Stability of motion*, Academic Press, New-York and London, 1966.
- Ma, Jun-hai and Chen, Yu-shu: Study for the Bifurcation Topological Structure and the Global Complicated Character of a King of Nonlinera Finance System (I). *Applied Mathematics and Mechanics* (English Edition, Vol. 22, No. 11, Nov. 2001), Art icle ID : 0253-4827 (2001) 11-1240-12 (Publisher: Shanghai University, Shanghai, China.
- MathWorld page  
<http://mathworld.wolfram.com/DuffingDifferentialEquation.html>

- Matsumoto, T.: A Chaotic Attractor from Chua's Circuit, IEEE Transactions on Circuits and Systems, vol. CAS-31, No. 12, DECEMBER 1984.
- Nonlinear Systems Laboratory Homepage  
<http://web.mit.edu/nsl/www/>
- Moukam, F.M., Kakmeni, S. Bowong, C. Tchawoua , E. Kaptouom: Chaos control and synchronization of a  $\Phi^6$  -Van der Pol oscillator, *Physics Letters A* , 322, 305–323, 2004.
- Nguyen, C.C., Antrazi, Sami S., Zhou, Zhen-Lei, Campbell, Charles E. Jr: Adaptive control of a stewart platform-based manipulator, *Journal of Robotic Systems*, volume 10, no. 5, pp. 657–687, 1993.
- Papageorgiou, M.: Dynamic Traffic Flow Modeling and Control, Short Course Notes, 2010.
- Papageorgiou, M., & Kotsialos, A.: Freeway Ramp Metering: An Overview, IEEE Intelligent Transportation Systems Conference Proceedings, Dearborn (MI), USA, October1-3, 2000, 2000.
- Prigogine, I., Lefever, R.: *J. Chem. Phys.* Vol. 48, pp. 1695–1700, 1968.
- Ilya Prigogine, Isabel Stengers: *Az új szövetség – A tudomány metamorfózisa*, Hermész könyvek, Akadémiai Kiadó, Budapest, 1995 (Hungarian edition). [Translated from: Ilya Prigogine et Isabelle Stengers: *La nouvelle alliance. Métamorphose de la science.*, Gallimard, Paris, 1986.]
- Rabinovich, M.I., Abarbanel, H.D.I.: The role of chaos in neural systems. *Neuroscience*, Vol. 87(1), pp. 5–14, 1998.
- Emission factor modelling and database for light vehicles, Report no. LTE 0523, June 2007.
- P.R. Roelfsema, A.K. Engel, P. König, W. Singer: Visuo-motor integration is associated with zero time-lag synchronization among cortical areas. *Nature* Vol. 385, pp. 157–161, 1997.
- Rössler, O.E.: An Equation for Continuous Chaos, *Physics Letters* 57A (5): 397–398, 1976.
- Rössler, O.E.: An Equation for Hyperchaos, *Physics Letters* 71A (2,3): 155–157, 1979.
- Rössler attractor, Wikipedia, the free encyclopedia  
[http://en.wikipedia.org/wiki/Rössler\\_attractor](http://en.wikipedia.org/wiki/Rössler_attractor)
- SCILAB China  
<http://www.scilab.org/communities/international/china>
- SCILAB homepage  
[http://www.scilab.org/education/higher\\_education](http://www.scilab.org/education/higher_education)

## SCILAB India

<http://www.scilab.org/communities/international/india>

## SCILAB Japan

<http://www.scilab.org/communities/international/japan>

Slotine, J.-J.E. and Li, W.: Applied Nonlinear Control, Prentice-Hall, 1991.

Somló, J., Lantos, B., Cát, P.T.: Advanced Robot Control, Akadémiai Kiadó, Budapest, 770 Hungary, 2002, p. 268.

Steven H. Strogatz: Nonlinear Dynamics and Chaos. Perseus publishing, 1994.

Tar, J.K.: Fixed Point Transformations as Simple Geometric Alternatives in Adaptive Control, in the Proc. of the 5th IEEE International Conference on Computational Cybernetics, October 19-21, 2007, Gammarth, Tunis, ISBN 1-4244-1146-7, pp. 19–34

Tar, J.K., Bitó, J.F., Rudas, I.J., Kozłowski, K.R., Tenreiro Machado, J.A.: Possible Adaptive Control by Tangent Hyperbolic Fixed Point Transformations Used for Controlling the  $\Phi^6$ -Type Van der Pol Oscillator, in the Proc. of the 6th IEEE International Conference on Computational Cybernetics (ICCC 2008), November 27–29, 2008, Hotel Academia, Stará Lesná, Slovakia, pp. 15–20, CD issue, IEEE Catalog Number: CFP08575-CDR, ISBN: 978-1-4244-2875-5, Library of Congress: 2008907697

Tar, J.K., Rudas, I.J., Bitó, J.F., Tenreiro Machado, J.A., and Kozłowski, K.: Adaptive VS/SM Controller based on Robust Fixed Point Transformations, in Proc. of the 13th IEEE International Conference on Intelligent Engineering Systems 2009 (INES 2009), Barbados, April 16–18, 2009, pp. 51–55, IEEE Catalog Number: CFP09IES-CDR, ISBN: 978-1-4244-4113-6, Library of Congress: 2009901330

Tar, J.K., Bitó, J.F., Nádai, I., Tenreiro Machado, J.A.: Robust Fixed Point Transformations in Adaptive Control Using Local Basin of Attraction, Acta Polytechnica Hungarica, Vol. 6 Issue No. 1, pp. 21–37, 2009.

Tar, J.K., Bitó, J.F., Rudas, I.J., Eredics, K.: Comparative Analysis of a Traditional and a Novel Approach to Model Reference Adaptive Control, in Proc. of the 11th International Symposium of Hungarian Researchers on Computational Intelligence and Informatics, Budapest, November 18–20, 2010, Óbuda University, pp. 93–98, ISBN: 978-1-4244-9278-7, IEEE Catalog No.: CFP1024M-PRT

Tar, J.K.: Towards replacing Lyapunov’s “direct” method in adaptive control of nonlinear systems. (invited plenary lecture), Proc. of the 3rd Con-

- ference in *Mathematical Methods in Engineering*, 21–24 October 2010, Coimbra, Portugal, Paper 11 (CD issue) 2010.
- Tar, J.K., Nádai, L., Rudas, I.J., Várkonyi, T.A.: RFPT-based Adaptive Control Stabilized by Fuzzy Parameter Tuning, *Proc. of the European Workshop on Advanced Control and Diagnosis (ACD 2011)*, Budapest University of Technology and Economics, Budapest, Hungary, 17-18 November, 2011., Section Fuzzy and Neural Solutions, 18 Nov. 2011, <http://www.conferences.hu/acd2011/>
- Tar, J.K., Nádai, L., Rudas, I.J., Várkonyi, T.A.: Adaptive emission control of freeway traffic using quasi-stationary solutions of an approximate hydrodynamic model, *Journal of Applied Nonlinear Dynamics*, vol. 1 no. 1, pp. 29–50, April, 2012.
- Tar, J.K., Rudas, I.J., Nádai, L., Várkonyi, T.A.: Iterative Adaptive Compensation of Modeling Uncertainties in Emission Control of Freeway Traffic. Accepted for publication at the 9th ITS World Congress, 22–26 October 2012, Vienna, Austria.
- Tar, J.K., Várkonyi, T.A.: New Design Approach to Model Reference Adaptive Controllers, invited lecture at the International Symposium “Recent Advances in Intelligent Systems”, May 15-16 2012, National University of Singapore, Singapore.
- Traffic Detector Handbook: Third Edition - Volume I. Research, Development, and Technology*, Turner-Fairbank Highway Research Center, Publication No. FHWA-HRT-06-108 October 2006.
- Transportation Research Board - Highway Capacity Manual, 2000.
- Turnbull, H.W. and Aitken, A.C.: Chapters 5-6 in *An Introduction to the Theory of Canonical Matrices*, London: Blackie and Sons, 1932.
- Utkin, V.I.: *Sliding Modes in Optimization and Control Problems*, 1992, Springer Verlag New York.
- Van der Pol, B.: *Philos. Mag.* Vol. 7 No. 3, p. 65, 1927.
- Várkonyi, T.A., Tar, J.K., Rudas, I.J.: Robust Fixed Point Transformations in Chaos Synchronization, in *Proc. of the 11th International Symposium of Hungarian Researchers on Computational Intelligence and Informatics*, Budapest, November 18-20, 2010, Óbuda University, pp. 219–224, ISBN: 809 978-1-4244-9278-7, IEEE Catalog No.: CFP1024M-PRT
- Várkonyi, T.A., Tar, J.K., Rudas, I.J., and Krómer, I.: VS-type Stabilization of MRAC Controllers Using Robust Fixed Point Transformations, submitted for publication to the IEEE 7th International Symposium on

- Applied Computational Intelligence and Informatics (SACI 2012), May 24-26, 2012, Timisora, Romania.
- Wang, J., Deng, B., and Tsang, K.M.: Chaotic synchronization of neurons coupled with gap junction under external electrical stimulation. *Chaos Solitons Fractals* Vol. 22, pp. 469–476, 2004).
- Wang, Q.Y., Lu, Q.S., Chen, G.R., and Guo, D.H.: Chaos synchronization of coupled neurons with gap junctions. *Phys. Lett. A* 356, pp. 17–25, 2006.
- Wang, J., Deng, B., and Fei, X.Y.: Synchronizing two coupled chaotic neurons in external electrical stimulation using backstepping control. *Chaos Solitons Fractals* Vol. 29(1), pp. 182–189, 2006.
- Wolfram Mathematica  
<http://mathworld.wolfram.com/JordanMatrixDecomposition.html>
- World report on road traffic injury prevention. (Eds. Margie Peden, Richard Scurfield, David Sleet, Dinesh Mohan, Adnan A. Hyder, Eva Jarawan and Colin Mathers), World Health Organization, Geneva, 2004.
- World's Best Universities: Engineering and IT, Posted September 21, 2010,  
<http://www.usnews.com/articles/education/worlds-best-universities/2010>
- Zhabotinsky, A.M., *Biophysika*, Vol. 9. p. 306, 1964.
- Zhang, T., Wang, J., Fei, X.Y. and Deng, B: Synchronization of coupled FitzHugh-Nagumo systems via MIMO feedback linearization control. *Chaos Solitons Fractals* Vol. 33 No. 1, 194–202, 2007.