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Selected Scholarly Contributions [Data Provided by **Scopus]**

Lenaghan, S.C., Wang, Y., Xi, N., Fukuda, T., Tarn, T., Hamel, W.R., Zhang, M.

[Grand challenges in bioengineered nanorobotics for cancer therapy](#)

(2013) IEEE Transactions on Biomedical Engineering, 60 (3), pp. 667-673.

Ganesan, N., Tarn, T.-J.

[Achieving decoherence suppression in open quantum systems by utilizing the model of environmental interactions](#)

(2013) Proceedings of the American Control Conference, art. no. 6580220, pp. 2562-2567.

Liu, P.-L., Li, S., Tarn, T.-J.

[Quantum multi-channel decoupling](#)

(2012) Proceedings of the World Congress on Intelligent Control and Automation (WCICA), art. no. 6358255, pp. 2286-2290.

Lai, K.W.C., Xi, N., Fung, C.K.M., Chen, H., Tarn, T.-J., Luo, Y.

[On-Chip Band Gap Engineering of Carbon Nanotubes](#)

(2012) Nano Optoelectronic Sensors and Devices, pp. 81-92.

Yang, J., Gao, R., Meng, M.Q.-H., Tarn, T.-J.

[Colored petri nets to model gene mutation classification](#)

(2012) Proceedings of the World Congress on Intelligent Control and Automation (WCICA), art. no. 6359440, pp. 5077-5082.

Zhang, J., Wu, R.B., Li, C.W., Tarn, T.J.

[Quantum chaotic communication](#)

(2012) Proceedings of the World Congress on Intelligent Control and Automation (WCICA), art. no. 6358178, pp. 1854-1859.

Wu, R.-B., Zhang, J., Li, C., Tarn, T.-J.

[Frequency-domain model of a class of open quantum control systems](#)

(2012) Proceedings of the IEEE Conference on Decision and Control, art. no. 6427067, pp. 3013-3018.

Xue, S.-B., Wu, R.-B., Zhang, W.-M., Zhang, J., Li, C.-W., Tarn, T.-J.

[Decoherence suppression via non-Markovian coherent feedback control](#)

(2012) Physical Review A - Atomic, Molecular, and Optical Physics, 86 (5), art. no. 052304, .

Chen, C., Dong, D., Lam, J., Chu, J., Tarn, T.-J.

[Control design of uncertain quantum systems with fuzzy estimators](#)

(2012) IEEE Transactions on Fuzzy Systems, 20 (5), art. no. 6145644, pp. 820-831.

Zhang, J., Wu, R.-B., Liu, Y.-X., Li, C.-W., Tarn, T.-J.

[Quantum coherent nonlinear feedback with applications to quantum optics on chip](#)

(2012) IEEE Transactions on Automatic Control, 57 (8), art. no. 6189054, pp. 1997-2008.

Wu, R.B., Zhang, J., Li, C.W., Long, G.L., Tarn, T.J.

[Control problems in quantum systems](#)

(2012) Chinese Science Bulletin, 57 (18), pp. 2194-2199.

Tarn, T.J., Wu, R.B.

[Preface](#)

(2012) Chinese Science Bulletin, 57 (18), p. 2193.

Yang, J., Gao, R., Meng, M.Q.-H., Tarn, T.-J.

[Colored petri nets to model gene mutation and amino acids classification](#)

(2012) Journal of Theoretical Biology, 300, pp. 183-192.

Yu, J., Li, J.-S., Tarn, T.-J.

[Optimal control of gene mutation in DNA replication](#)

(2012) Journal of Biomedicine and Biotechnology, 2012, art. no. 743172, .

Zhang, J., Wu, R.-B., Miao, L., Xi, N., Li, C.-W., Wang, Y.-C., Tarn, T.-J.

[Suppressing nano-scale stick-slip motion by feedback](#)

(2012) Journal of Applied Physics, 111 (5), art. no. 054308, .

Dong, D., Chen, C., Chu, J., Tarn, T.-J.

[Robust quantum-inspired reinforcement learning for robot navigation](#)

(2012) IEEE/ASME Transactions on Mechatronics, 17 (1), art. no. 5669349, pp. 86-97.

Zhang, J., Liu, Y.-X., Zhang, W.-M., Wu, L.-A., Wu, R.-B., Tarn, T.-J.

[Deterministic chaos can act as a decoherence suppressor](#)

(2011) Physical Review B - Condensed Matter and Materials Physics, 84 (21), art. no. 214304, .

Yang, R., Zhang, M., Tarn, T.-J.

[Data-driven two degree-of-freedom control for a micropump and microneedle integrated device for diabetes care](#)

(2011) Proceedings of the 16th International Symposium on Artificial Life and Robotics, AROB 16th'11, pp. 4-14.

Chen, C., Dong, D., Li, H.-X., Tarn, T.-J.

[Hybrid MDP based integrated hierarchical Q-learning](#)

(2011) Science China Information Sciences, 54 (11), pp. 2279-2294.

Rong, Z., Tarn, T.-J., Steve, T., Frank, L., Jianming, C., Gang, D.

[IEEE-CYBER 2011 welcome message](#)

(2011) 2011 IEEE International Conference on Cyber Technology in Automation, Control, and Intelligent Systems, CYBER 2011, art. no. 6011820, .

Xue, S., Zhang, J., Wu, R., Li, C., Tarn, T.-J.

[Quantum operation for one non-Markovian qubit via AC control](#)

(2011) Proceedings of the 30th Chinese Control Conference, CCC 2011, art. no. 6001305, pp. 5352-5357.

Zhang, D., Tarn, T.J., He, X.X., Zou, T.

[Geometric characterization of multi-input lower-triangular forms](#)

(2011) Science China Information Sciences, 54 (9), pp. 1868-1882.

Xue, S., Zhang, J., Wu, R., Li, C., Tarn, T.-J.

[Quantum operation for a one-qubit system under a non-Markovian environment](#)

(2011) Journal of Physics B: Atomic, Molecular and Optical Physics, 44 (15), art. no. 154016, .

Tarn, T.-J., Chen, S.-B., Fang, G.

[Lecture Notes in Electrical Engineering: Preface](#)

(2011) Lecture Notes in Electrical Engineering, 88 LNEE, pp. V-VI.

Zhang, J., Miao, L., Wu, R.-B., Xi, N., Li, C.-W., Wang, Y.-C., Tarn, T.-J.

[Reducing stick-slip motion in one-dimensional nano manipulation by real-time feedback control](#)

(2010) 2010 10th IEEE Conference on Nanotechnology, NANO 2010, art. no. 5697831, pp. 826-830.

Zhang, J., Liu, Y.-X., Wu, R.-B., Li, C.-W., Tarn, T.-J.

[Transition from weak to strong measurements by nonlinear quantum feedback control](#)

(2010) Physical Review A - Atomic, Molecular, and Optical Physics, 82 (2), art. no. 022101, .

Yang, R., Tarn, T.-J., Zhang, M.

[Data-driven feedforward control for electroporation mediated gene delivery in gene therapy](#)

(2010) IEEE Transactions on Control Systems Technology, 18 (4), art. no. 5286233, pp. 935-943.

Gao, R., Yu, J., Zhang, M., Tarn, T.-J., Li, J.-S.

[Systems theoretic analysis of the central dogma of molecular biology: Some recent results](#)

(2010) IEEE Transactions on Nanobioscience, 9 (1), art. no. 5401093, pp. 59-70.

Zhang, J., Wu, R.-B., Li, C.-W., Tarn, T.-J.

[Protecting coherence and entanglement by quantum feedback controls](#)

(2010) IEEE Transactions on Automatic Control, 55 (3), art. no. 5395610, pp. 619-633.

Lai, K.W.C., Xi, N., Fung, C.K.M., Chen, H., Tarn, T.-J.

[Engineering the band gap of carbon nanotube for infrared sensors](#)

(2009) Applied Physics Letters, 95 (22), art. no. 221107, .

Yang, R., Bewick, S., Zhang, M., Hamel, W.R., Tarn, T.-J.

[Adaptive immune system inspired perimeter patrol control strategy](#)

(2009) 2009 IEEE/RSJ International Conference on Intelligent Robots and Systems, IROS 2009, art. no. 5354733, pp. 371-376.

Gao, R., Yu, J., Zhang, M., Tarn, T.-J.

[A preliminary study on mathematical modeling of protein synthesis process](#)

(2009) Proceedings - 2009 IEEE International Conference on Intelligent Computing and Intelligent Systems, ICIS 2009, 2, art. no. 5358375, pp. 335-339.

Zhang, J., Wu, R.-B., Liu, Y.-X., Li, C.-W., Tarn, T.-J.

[Quantum-feedback-control induced bifurcation and its application to qubit readout](#)

(2009) Proceedings of the IEEE Conference on Decision and Control, art. no. 5400125, pp. 2480-2485.

Yang, R., Zhang, M., Tarn, T.-J.

[Data-driven feedforward design for electroporation mediated gene delivery](#)

(2009) 2009 9th IEEE Conference on Nanotechnology, IEEE NANO 2009, art. no. 5394724, pp. 794-797.

Gao, R., Zhang, M., Yu, J., Tarn, T.-J.

[Mathematical models of protein secondary structures and gene mutation](#)

(2009) 2009 IEEE International Conference on Mechatronics and Automation, ICMA 2009, art. no. 5246578, pp. 4327-4332.

Lai, K.W.C., Xi, N., Fung, C.K.M., Chen, H., Tarn, T.J.

[Development of carbon nanotube based spectrum infrared sensors](#)

(2009) 2009 IEEE Nanotechnology Materials and Devices Conference, NMDC 2009, art. no. 5167554, pp. 130-135.

Zhang, J., Liu, Y.-X., Li, C.-W., Tarn, T.-J., Nori, F.

[Generating stationary entangled states in superconducting qubits](#)

(2009) Physical Review A - Atomic, Molecular, and Optical Physics, 79 (5), art. no. 052308, .

Zhang, J., Wu, R.-B., Li, C.-W., Tarn, T.-J.

[Using a squeezed field to protect two-atom entanglement against spontaneous emissions](#)

(2009) Journal of Physics A: Mathematical and Theoretical, 42 (3), art. no. 035304, .

Dong, D., Lam, J., Tarn, T.J.

[Rapid incoherent control of quantum systems based on continuous measurements and reference model](#)

(2009) IET Control Theory and Applications, 3 (2), pp. 161-169.

Gao, R., Yu, J., Zhang, M., Tarn, T.-J., Li, J.-S.

[A mathematical formulation of the central dogma of molecular biology](#)

(2009) Nanomedicine: A Systems Engineering Approach, pp. 82-117.

Jiang, M., Zhang, Z.-k., Dong, D.-y., Liu, B., Tarn, T.-J.

[The improved quantum switching mechanism based on contention](#)

(2009) Chaos, Solitons and Fractals, 39 (4), pp. 1936-1942.

Zhang, J., Wu, R., Li, C., Tarn, T.-J.

[Bath-induced control of two-qubit entanglement under markovian noises](#)

(2008) Proceedings of the IEEE Conference on Decision and Control, art. no. 4738684, pp. 4534-4539.

Ganesan, N., Tarn, T.-J.

[Disturbance decoupling for open quantum systems: Quantum internal model principle](#)

(2008) Analysis and Design of Nonlinear Control Systems: In Honor of Alberto Isidori, pp. 355-375.

Yang, R., Tarn, T.-J., Zhang, M.

[Event-based feedforward control of a drug delivery system for diabetes care](#)

(2008) IFAC Proceedings Volumes (IFAC-PapersOnline), 17 (1 PART 1), .

Luo, Y., Zhang, J., Xi, N., Chen, H., King Lai, W.-C., Carmen Fung, K.-M., Tarn, T.J.

[Engineering the band gap of carbon nanotubes](#)

(2008) 2008 8th IEEE Conference on Nanotechnology, IEEE-NANO, art. no. 4617042, pp. 183-186.

Dong, D., Zhang, C., Rabitz, H., Pechen, A., Tarn, T.-J.

[Incoherent control of locally controllable quantum systems](#)

(2008) Journal of Chemical Physics, 129 (15), art. no. 154103, .

Dong, D.Y., Chen, C., Tarn, T.-J., Pechen, A., Rabitz, H.

[Incoherent control of quantum systems with wavefunction-controllable subspaces via quantum reinforcement learning](#)

(2008) IEEE Transactions on Systems, Man, and Cybernetics, Part B: Cybernetics, 38 (4), pp. 957-962.

Long, G., Tarn, T.J.

[Progress in theoretical quantum computing](#)

(2008) Frontiers of Computer Science in China, 2 (2), p. 113.

Ganesan, N., Tarn, T.-J.

[Quantum internal model principle and enhanced disturbance decoupling](#)

(2007) Proceedings of the IEEE Conference on Decision and Control, art. no. 4434706, pp. 6358-6364.

Tarn, T.-J., Ganesan, N.

[Quantum computing and information acquisition](#)

(2007) 2007 International Symposium on Micro-NanoMechatronics and Human Science, MHS, art. no. 4420911, pp. 525-531.

Wu, J.-W., Li, C.-W., Tarn, T.-J., Zhang, J.

[Optimal bang-bang control for SU \(1,1\) coherent states](#)

(2007) Physical Review A - Atomic, Molecular, and Optical Physics, 76 (5), art. no. 053403, .

Zhang, J., Li, C.-W., Tarn, T.-J., Wu, J.-W.

[Analytically solvable two-qubit entanglement monotone](#)

(2007) Physical Review A - Atomic, Molecular, and Optical Physics, 76 (3), art. no. 032306, .

Jiang, M., Zhang, Z.-K., Dong, D.-Y., Tarn, T.-J.

[Quantum binary searching algorithm and circuit implementation](#)

(2007) Guangdianzi Jiguang/Journal of Optoelectronics Laser, 18 (8), pp. 981-983.

Ganesan, N., Tarn, T.-J.

[Decoherence control in open quantum systems via classical feedback](#)

(2007) Physical Review A - Atomic, Molecular, and Optical Physics, 75 (3), art. no. 032323, .

Zhang, J., Wu, R.-B., Li, C.-W., Tarn, T.-J., Wu, J.-W.

[Asymptotically noise decoupling for Markovian open quantum systems](#)

(2007) Physical Review A - Atomic, Molecular, and Optical Physics, 75 (2), art. no. 022324, .

Zhang, M., Cheng, M.X., Tarn, T.J.

[Genetic code based coding and mathematical formulation for DNA computation](#)

(2006) Proceedings - IEEE International Conference on Robotics and Automation, 2006, art. no. 1642256, pp. 3630-3635.

Tarn, T.-J., Ganesan, N.

[Feedback control of decoherence in quantum mechanical systems](#)

(2006) 2006 SICE-ICASE International Joint Conference, art. no. 4108983, pp. 1844-1847.

Wu, J.-W., Li, C.-W., Wu, R.-B., Tarn, T.-J., Zhang, J.

[Quantum control by decomposition of SU\(1, 1\)](#)

(2006) Journal of Physics A: Mathematical and General, 39 (43), art. no. 010, pp. 13531-13551.

Jiang, M., Zhang, Z.-K., Tarn, T.-J.

[Quantum network optimization based on the use of relaxing qubits](#)

(2006) Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics), 4114 LNAI - II, pp. 838-843.

Zhang, M., Mao, K., Tao, W., Tarn, T.-J.

[A computational method to geometric measure of biological particles and application to DNA microarray spot size estimation](#)

(2006) Medical and Biological Engineering and Computing, 44 (4), pp. 275-279.

Zhang, M., Tao, W., Fisher, W., Tarn, T.-J.

[An industrial solution to automatic robot calibration and workpiece pose estimation for semiconductor and gene-chip microarray fabrication](#)

(2006) Industrial Robot, 33 (2), pp. 88-96.

Zhang, J., Li, C.-W., Wu, J.-W., Wu, R.-B., Tarn, T.-J.

[Quasimultipartite entanglement measure based on quadratic functions](#)

(2006) Physical Review A - Atomic, Molecular, and Optical Physics, 73 (2), art. no. 022319, .

Zhang, M., Cheng, M.X., Tarn, T.-J.

[A mathematical formulation of DNA computation](#)

(2006) IEEE Transactions on Nanobioscience, 5 (1), pp. 32-40.

Wu, R.-B., Tarn, T.-J., Li, C.-W.

[Smooth controllability of infinite-dimensional quantum-mechanical systems](#)

(2006) Physical Review A - Atomic, Molecular, and Optical Physics, 73 (1), .

Napoli, J.T., Tarn, T.J., Morrow Jr., J.R., An, E.

[Efficient autonomous underwater vehicle communication networks using optimal dynamic flows](#)

(2005) Lecture Notes in Control and Information Sciences, 321, pp. 239-256.

Tarn, T.J.

[Chinese initiative in robotic development program](#)

(2005) 2005 IEEE Workshop on Advanced Robotics and its Social Impacts, 2005, art. no. 1511608, p. 1.

Ganesan, N., Tarn, T.-J.

[Control of decoherence in open quantum systems using feedback](#)

(2005) Proceedings of the 44th IEEE Conference on Decision and Control, and the European Control Conference, CDC-ECC '05, 2005, art. no. 1582193, pp. 427-433.

Napoli, J.T., Tarn, T.J., Morrow Jr., J.R., An, E.

[Optimal communication control for cooperative autonomous underwater vehicle networks](#)

(2005) Proceedings - IEEE International Conference on Robotics and Automation, 2005, art. no. 1570346, pp. 1624-1631.

Tarn, T.-J., Tan, J., Xi, N.

[A perceptive reference frame for cooperative and reconfigurable multi-robot systems](#)

(2005) IFAC Proceedings Volumes (IFAC-PapersOnline), 16, pp. 553-558.

Zhang, M., Pianetta, P.A., Tarn, T.J.

[Integrating molecular dynamics for DNA bio-chip fabrication and hybridization automation](#)

(2005) IEEE/ASME International Conference on Advanced Intelligent Mechatronics, AIM, 1, art. no. MA2-01, pp. 25-30.

Zhang, J., Li, C.-W., Wu, R.-B., Tarn, T.-J., Liu, X.-S.

[Maximal suppression of decoherence in Markovian quantum systems](#)

(2005) Journal of Physics A: Mathematical and General, 38 (29), pp. 6587-6601.

Tarn, T.-J., Sanposh, P., Cheng, D., Zhang, M.

[Output regulation for nonlinear systems: Some recent theoretical and experimental results](#)

(2005) IEEE Transactions on Control Systems Technology, 13 (4), pp. 605-610.

Zhang, M., Fisher, W., Sitte, H., Tarn, T.-J.

[A function model-based approach to develop a micro-titer tray manufacturing automation system for DNA microarray fabrication](#)

(2005) Journal of Advanced Manufacturing Systems, 4 (1), pp. 83-101.

Lan, C., Tarn, T.-J., Chi, Q.-S., Clark, J.W.

[Analytic controllability of time-dependent quantum control systems](#)

(2005) Journal of Mathematical Physics, 46 (5), art. no. 052102, .

Li, G., Xi, N., Saeed, A., Chen, H., Zhang, J., Lit, W.J., Fungt, C.K.M., Chant, R.H.M., Zhang, M., Tarn, T.-J.

[Experimental studies of DNA electrical properties using AFM based nano-manipulator](#)

(2004) 2004 4th IEEE Conference on Nanotechnology, pp. 308-310.

Li, G., Xi, N., Chen, H., Zhang, M., Li, W.J., Fung, C.K.M., Chan, R.H.M., Tarn, T.-J.

[Nano-assembly of DNA based electronic devices using atomic force microscopy](#)

(2004) 2004 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 1, pp. 583-588.

Zhang, M., Sabharwal, C.L., Tao, W., Tarn, T.-J., Xi, N., Li, G.

[Interactive DNA sequence and structure design for DNA nanotechnology and DNA computation](#)

(2004) 2004 4th IEEE Conference on Nanotechnology, pp. 299-301.

Lan, C., Tarn, T.-J., Chi, Q.-S., Clark, J.W.

[Strong analytic controllability for hydrogen control systems](#)

(2004) Proceedings of the IEEE Conference on Decision and Control, 5, art. no. FrB07.2, pp. 4812-4817.

Zhang, M., Sabharwal, C.L., Tao, W., Tarn, T.-J., Li, G., Xi, N.

[Interactive DNA sequence and structure design for DNA nanoapplications](#)

(2004) IEEE Transactions on Nanobioscience, 3 (4), pp. 286-292.

Ge, M., Xu, Y., Tarn, T.J.

[Kernel-based data compression for internet-based manufacturing monitoring](#)

(2004) International Journal of Advanced Manufacturing Technology, 24 (9-10), pp. 693-699.