

Domenico D'Alessandro  
**List of Publications updated February 22-nd 2008**

*Book*

- [1] D. D'Alessandro, *Introduction to Quantum Control and Dynamics*, CRC Press, August 2007.

*Ph.D. Thesis*

- [1] D. D'Alessandro, Optimal control techniques with applications (Tecniche di controllo ottimo e loro applicazioni), Ph.D. Thesis, Department of Electrical Engineering, Universita' degli studi di Padova, Italy, 1996 (in Italian).

- [2] D. D'Alessandro, Ergodic Theory and the Control of Mixing in Fluid Flows, Ph. D. Thesis, Department of Mechanical and Environmental Engineering, University of California at Santa Barbara, 1999 (Available at <http://www.public.iastate.edu/daless/>).

*Book Chapters*

- [1] F. Albertini and D. D'Alessandro, Remarks on the observability of nonlinear discrete time systems, *System Modeling and Optimization (Prague 1995)*, J. Dolezal & al. eds. 155-162, Chapman & Hall, London, 1996.

- [2] D. D'Alessandro and M. Dahleh, Geometric control of quantum mechanical systems, in *Lagrangian and Hamiltonian Methods for Nonlinear Control 2000, (IFAC workshop)*, N.E. Leonard and R. Ortega, eds. 45-49 Pergamon Press, 2000.

- [3] D. D'Alessandro, Directions in the theory of quantum control, in *Multidisciplinary Research in Control: The Mohammed Dahleh Legacy* (Santa Barbara CA 2002) 72-80, L. Giarre' and B. Bamieh eds., *Lecture Notes in Control and Information Sciences* 289, Springer Verlag, Berlin, 2003.

- [4] D. D'Alessandro and M. Dahleh, Optimal control of two-level quantum systems, Russian translation of journal paper<sup>1</sup>, in the volume "Control of Molecular and Quantum Systems" (in Russian: "Upravlenie molekulyarnymi i kvantovymi sistemami"), Ed. A. L. Fradkov, O. A. Yakubovskii, Translated by I. A. Makarov, Moscow-Izhevsk, Institute for Computer Studies, 2003, pp. 245-276.

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- [1] F. Albertini and D. D'Alessandro, Input-Output model equivalence of spin systems; A characterization using Lie algebra homomorphisms, to appear in *SIAM Journal on Control and Optimization*
- [2] M. Dagli, D. D'Alessandro and J. Smith, A general framework for recursive decompositions of unitary quantum evolutions, to appear in *Journal of Physics A, Mathematical and Theoretical*.
- [3] D. D'Alessandro, G. Parlangeli and F. Albertini, Nonstationary quantum walks on the cycle, *J. Phys. A Math. Theor.* (2007) 40 14447-14455.
- [4] D. D'Alessandro and F. Albertini, Quantum symmetries and Cartan decompositions in arbitrary dimensions, *J. Phys. A Math. Theor.* 40 (2007), no. 10, 2439–2453.
- [5] D. D'Alessandro and R. Romano, Decomposition of Unitary Evolutions and entanglement dynamics of bipartite quantum systems, *Journal of Mathematical Physics* 47 082109 (2006)
- [6] R. Romano and D. D'Alessandro, Environment-mediated control of a quantum system, *Physical Review Letters*, 97, 080402 (2006).
- [7] G. Giedke, J. M. Taylor, D. D'Alessandro, M. D. Lukin, A. Imamoglu, Quantum measurement of the nuclear spin polarization in quantum dots, *Physical Review A*, 74 032316 (2006) quant-ph/0508144.
- [8] D. D'Alessandro and R. Romano, Further results on the observability of quantum systems under general measurement, *Quantum Information Processing*, Vol. 5, No. 3. (June 2006), pp. 139-160.
- [9] R. Romano and D. D'Alessandro, Incoherent control and entanglement for two-dimensional coupled systems, also xxx.lanl.gov, quant-ph/0510020, *Physical Review A* 73 022323 (2006).
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- [11] F. Albertini and D. D'Alessandro, Input-Output equivalence of spin networks under multiple measurements, *Mathematics of Control, Signals and Systems*, Vol. 17, No. 1, Pages 1-13, 2005. (Electronic copy available at <http://www.springerlink.com/index/10.1007/s00498-004-0146-z>)
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- [16] F. Albertini and D. D'Alessandro, Notions of controllability for multilevel bilinear quantum mechanical systems, *IEEE Transactions on Automatic Control*, Vol. 48, No. 8 (2003), pg. 1399-1403.
- [17] D. D'Alessandro, Controllability of one spin and two homonuclear spins, *Mathematics of Control, Signals and Systems*, (2003) 16:1-25.
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#### *Refereed Conference Papers*

[1] F. Albertini and D. D'Alessandro, Lagrangian Formulation and Geometric Control of Switching LC Electrical Networks, in *Proceedings of the 45-th conference on Decision and Control*, San Diego CA Dec. 2006.

[2] D. D'Alessandro and R. Romano, Decompositions of unitary evolutions and entanglement dynamics of bipartite quantum systems, in *Proceedings of the 45-th conference on Decision and Control*, San Diego CA Dec. 2006.

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*Control*, Seville, Spain, Dec. 2005.

- [5] D. D'Alessandro, On the observability and state determination of quantum mechanical systems, in *Proceedings of the 43-rd Conference on Decision and Control*, Paradise Island, Bahamas, Dec. 2004.
- [6] U. G. Vaidya, D. D'Alessandro and I. Mezić, Control of Heisenberg spin systems; Lie algebraic decompositions and action-angle variables. in *Proceedings of the 42-nd Conference on Decision and Control*
- [7] F. Albertini and D. D'Alessandro, Observability, measurement and parameter identification of quantum mechanical systems, in *Proceedings of the 42-nd Conference on Decision and Control*
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- [10] F. Borsa, D. D'Alessandro, L. Miller and M. Salapaka, Quantum control of molecular magnets using atomic force microscopy, *Proceedings 40 – th Conference on Decision and Control*, Dec. 2001.
- [11] F. Albertini and D. D'Alessandro, Notions of controllability for quantum mechanical systems, *Proceedings 40 – th Conference on Decision and Control*, Dec. 2001.
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- [15] D. D'Alessandro, Algorithms for quantum control based on decompositions of Lie groups, in *Proceedings 39-th Conference on Decision and Control*, Sydney, Australia, Dec. 2000.
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#### *Preprints*

[1] D. D'Alessandro, The Lie Algebra Rank Condition for non-bilinear quantum systems, [xxx.lanl.org/quant-ph/0301144](http://xxx.lanl.org/quant-ph/0301144).