

## Scientific publications of Prof. Massimo Franceschetti

### Journal publications

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- [1] “Ray propagation in non-uniform random lattices. Part II.”  
A. Martini, M. Franceschetti, R. Azaro, A. Massa.  
*Journal of the Optical Society of America*. In press.
- [2] “A note on Lévêque and Telatar’s upper bound on the capacity of wireless ad-hoc networks.”  
M. Franceschetti.  
*IEEE Transactions on Information Theory*. In press.
- [3] “When a random walk of fixed length can lead uniformly anywhere inside a hypersphere.”  
M. Franceschetti.  
*Journal of statistical physics*, 127(4), pp. 813–823, May 2007.
- [4] “Stochastic ray propagation in stratified random lattices.”  
A. Martini, M. Franceschetti, A. Massa.  
*IEEE Antennas and wireless propagation letters*, 6, pp. 232-235, April 2007.
- [5] “Closing the gap in the capacity of wireless networks via percolation theory.”  
M. Franceschetti, O. Dousse, D. Tse, P. Thiran.  
*IEEE Transactions on Information Theory*, 53(3), pp. 1009–1018, March 2007.
- [6] “Foundations of control and estimation over lossy networks.”  
L. Schenato, B. Sinopoli, M. Franceschetti, K. Poolla, S. Sastry.  
*Proceedings of the IEEE*. Special issue on emerging technologies of networked control systems, 95(1), pp.163–187, January 2007.
- [7] “Navigation in small world networks, a continuum, scale-free model.”  
M. Franceschetti, R. Meester.  
*Journal of Applied Probability*, 43(4), pp. 1173-1180, December 2006.
- [8] “Ray propagation in non-uniform random lattices.”  
A. Martini, M. Franceschetti, A. Massa.  
*Journal of the Optical Society of America*, A-23(9), pp. 2251-2261, September 2006.
- [9] “Percolation in the signal to interference ratio graph.”  
O. Dousse, M. Franceschetti, N. Macris, R. Meester, P. Thiran.  
*Journal of Applied Probability*. 43(2), pp. 552–562, June 2006.
- [10] “Critical node lifetimes in random networks via the Chen-Stein method.”  
M. Franceschetti, R. Meester. .  
*IEEE Transactions on Information Theory/ACM Transactions on Networking*. Joint special issue on network information theory, 52(6), pp. 2831–2837, June 2006.

- [11] “On the throughput scaling of wireless relay networks.”  
O. Dousse, M. Franceschetti, P. Thiran.  
*IEEE Transactions on Information Theory/ACM Transactions on Networking*. Joint special issue on network information theory, 52(6), pp. 2756–2761, June 2006.
- [12] “Ray propagation in a random lattice: a maximum entropy, anomalous diffusion process.”  
S. Marano, M. Franceschetti.  
*IEEE Transactions on Antennas and Propagation*, 53(6), pp. 1888–1896, June 2005.
- [13] “Continuum percolation with unreliable and spread out connections.”  
M. Franceschetti, L. Booth, M. Cook, R. Meester, J. Bruck.  
*Journal of Statistical Physics*, 118 (3-4), pp. 721-734, February 2005.
- [14] “Stochastic rays pulse propagation.”  
M. Franceschetti.  
*IEEE Transactions on Antennas and Propagation*, 52(10), pp. 2742–2752, October 2004.
- [15] “Kalman filtering with intermittent observations.”  
B. Sinopoli, L. Schenato, M. Franceschetti, K. Poolla, M. J. Jordan, S. S. Sastry.  
*IEEE Transactions on Automatic Control*. Special issue on network control, 49(9), pp. 1453–1464, September 2004.
- [16] “Lower bounds on data collection time in sensory networks.”  
C. Florens, M. Franceschetti, R.J. McEliece.  
*IEEE Journal on selected areas in communications*. Special issue on fundamental performance issues in sensor networks, 22(6), pp. 1110–1120, August 2004.
- [17] “A random walk model of wave propagation.”  
**S. A. Schelkunoff Transactions Prize Paper Award**  
M. Franceschetti, J. Bruck, L. J. Schulman.  
*IEEE Transactions on Antennas and Propagation*, 52(5), pp. 1304–1317, May 2004.
- [18] “A geometric theorem for network design.”  
M. Franceschetti, M. Cook, J. Bruck.  
*IEEE Transactions on Computers*, 53(4), pp. 483–489 , April 2004.
- [19] “Covering algorithms, continuum percolation, and the geometry of wireless networks”  
L. Booth, J. Bruck, M. Franceschetti, R. Meester.  
*Annals of Applied Probability*, 13(2), pp. 722–741, May 2003.
- [20] “A group membership algorithm with a practical specification.”  
M. Franceschetti, J. Bruck.  
*IEEE Transactions on Parallel and Distributed Systems*, 12(10), pp. 1190–1200, October 2001.

## Preprints under revision by journals

- [1] “Space-time duality in multiple antenna channels.”  
M. Franceschetti, K. Chakraborty.  
Submitted.
  
- [2] “Outage capacity of Poisson fading channels.”  
K. Chakraborty, S. Dey, M. Franceschetti.  
Submitted.
  
- [3] “Data rate theorem for stabilization over fading channels.”  
P. Minero, M. Franceschetti, G. Nair, S. Dey.  
Submitted.

## Book Chapters

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- [1] “Wireless Channel Model.” M. Franceschetti, D. Riccio.  
‘*Wireless Networks. From physical models to sensing and communication.*’ Edited by  
G. Franceschetti and S. Stornelli, *Elsevier*, 2006.

## Conference Publications

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- [1] “Towards stabilization over fading channels.”  
P. Minero, M. Franceschetti, G. Nair, S. Dey.  
*Proceedings of the International Workshop on Control and Communications (CON-COM), Cyprus, May 2007.*
  
- [2] “Percolation-based approaches for ray-optical propagation in an inhomogenous random distribution of discrete scatterers.”  
A. Martini, M. Franceschetti, A. Massa.  
*Proceedings of the First European Conference on Antennas and Propagation*, Nice, France, November, 2006.
  
- [3] “Maxwell meets Shannon: space-time duality in multiple antenna channels.”  
**(Invited paper)**  
K. Chakraborti, M. Franceschetti.  
*Proceedings of the 44-th Allerton Conference on Communications Control and Computing*. Special session on cooperative wireless communication and sensing, Monticello, Illinois, September 2006.
  
- [4] “Statistical physics of information flow in wireless networks.”  
**(Invited paper)**  
M. Franceschetti.  
*Proceedings of the International Conference on Non Linear Theory and Applications (NOLTA '06)*. Bologna, Italy, September 2006.
  
- [5] “Optimality of Linear Codes for Broadcast-Mode Multicast Networks.”  
R. Appuswamy, M. Franceschetti, K. Zeger.  
*Proceedings of the IEEE International Symposium on Information Theory (ISIT '06)*, Seattle, Washington, July 2006.

- [6] “An LQG optimal linear controller for systems with packet losses.”  
B. Sinopoli, L. Schenato, M. Franceschetti, K. Poolla, S. Sastry.  
*Proceedings of the 44-th IEEE International Conference on Decision and Control (CDC '05)*, Seville, Spain, December 2005.
- [7] “Estimation and control in lossy networks.”  
**(Invited paper)**  
B. Sinopoli, L. Schenato, M. Franceschetti, K. Poolla, S. Sastry.  
*Proceedings of the 43-rd Allerton Conference on Communications Control and Computing*. Special session on communications and control, Monticello, Illinois, September 2005.
- [8] “A percolation model for wave propagation in non-uniform random media.”  
A. Martini, M. Franceschetti, A. Massa.  
*Proceedings of the International Conference on Electromagnetics in Advanced Applications (ICEAA '05)*. Torino, Italy, September 2005.
- [9] “Impulse power profile via stochastic rays: results and open problems.”  
M. Franceschetti, S. Marano.  
**(Invited paper)**  
*Proceedings of the International Conference on Electromagnetics in Advanced Applications (ICEAA '05)*. Special session on Ultra Wide Band channel modeling. Torino, Italy, September 2005.
- [10] “Critical node lifetimes in random networks via the Chen-Stein method.”  
M. Franceschetti, R. Meester.  
*Proceedings of the IEEE International Symposium on Information Theory (ISIT '05)*. Adelaide, Australia, September 2005.
- [11] “LQG control with missing observation and control packets.”  
B. Sinopoli, L. Schenato, M. Franceschetti, K. Poolla, S. S. Sastry.  
*Proceedings of the International Federation of Automatic Control World Congress (IFAC '05)*. Prague, Czech Republic, July 2005.
- [12] “Optimal control with unreliable communication: the TCP Case”  
B. Sinopoli, L. Schenato, M. Franceschetti, K. Poolla, S. S. Sastry. *Proceedings of the American Control Conference (ACC '05)*. Portland, Oregon, June 2005.
- [13] “Information theoretic bounds on the throughput scaling of wireless relay networks.”  
O. Dousse, M. Franceschetti, P. Thiran.  
*Proceedings of the IEEE Information and Communication Conference (INFOCOM '05)*. Miami, Florida, March 2005.
- [14] “Time varying optimal control with packet losses.”  
B. Sinopoli, L. Schenato, M. Franceschetti, K. Poolla, S. S. Sastry.  
*Proceedings of the 43-rd IEEE International Conference on Decision and Control (CDC '04)*. Paradise Island, Bahamas, December 2004.
- [15] “Stochastic modeling of complex environments for wireless signal propagation.”  
**(Invited paper)**.  
M. Franceschetti.

*Proceedings of the 42-nd Allerton Conference on Communications Control and Computing*. Special session on wireless networks, Monticello, Illinois, September 2004.

- [16] “The costly path from percolation to full connectivity.”  
**(Invited paper)**.  
O. Dousse, M. Franceschetti, P. Thiran.  
*Proceedings of the 42-nd Allerton Conference on Communications Control and Computing*. Special session on sensor networks, Monticello, Illinois, September 2004.
- [17] “Closing the gap in the capacity of random wireless networks.”  
M. Franceschetti, O. Dousse, D. Tse, P. Thiran.  
*Proceedings of the IEEE International Symposium on Information Theory (ISIT '04)*. Chicago, Illinois, 2004.
- [18] “Power delay profile in a cluttered environment.”  
M. Franceschetti.  
*Proceedings of the IEEE International Conference on Communications (ICC '04)*. Paris, France, July 2004.
- [19] “Kalman filtering with intermittent observations.”  
**Best student paper finalist**.  
B. Sinopoli, L. Schenato, M. Franceschetti, K. Poolla, M. I. Jordan, S.S. Sastry.  
*Proceedings of the 42-nd IEEE International Conference on Decision and Control (CDC '03)*. Maui, Hawaii, 2003.
- [20] “Stochastic rays: the cluttered environment.”  
**(Invited paper)**.  
M. Franceschetti.  
*Proceedings of the International Conference on Electromagnetics in Advanced Applications (ICEAA)*. Special session on parametrizing wave complexity. Torino, Italy, September 2003.
- [21] “Phase transitions, an engineering perspective.”  
**(Invited paper)**.  
M. Franceschetti.  
*Proceedings of the 41-st Annual Allerton Conference on Communication, Control, and Computing*. Special session on stochastic geometry and related topics with applications to networking. Monticello, Illinois, October 2003.
- [22] “Stochastic rays pulse propagation.”  
**(Invited paper)**.  
M. Franceschetti.  
*Proceedings of the 41-st Annual Allerton Conference on Communication, Control, and Computing*. Special session on fundamentals of sensor webs. Monticello, Illinois, October 2003.
- [23] “The role of entropy in wave propagation.”  
M. Franceschetti, S. Marano, F. Palmieri.  
*Proceedings of the IEEE International Symposium on Information Theory (ISIT '03)*. Yokohama, Japan, 2003.

- [24] “Ad hoc wireless networks with noisy links.”  
L. Booth, J. Bruck, M. Cook, M. Franceschetti.  
*Proceedings of the IEEE International Symposium on Information Theory (ISIT '03).*  
Yokohama, Japan, 2003.
- [25] “Critical power for connectivity in clustered wireless networks.”  
L. Booth, J. Bruck, M. Franceschetti, R. Meester.  
*Proceedings of the IEEE International Symposium on Information Theory (ISIT '02).*  
Lausanne, Switzerland, 2002.
- [26] “Microcellular systems, wave propagation, and random walks.”  
M. Franceschetti, J. Bruck, L. J. Schulman.  
*Proceedings of the IEEE International Antennas and Propagation Symposium (AP-S '02).* San Antonio, Texas, 2002.
- [27] “High load on highly available systems.”  
M. Franceschetti, N. Mazzocca, G. Rotondi.  
*Proceedings of the International Conference on Parallel and Distributed Processing Techniques and Applications. (PDPTA '00).* Las Vegas, Nevada, 2000.
- [28] “On the possibility of group membership protocols.”  
M. Franceschetti, J. Bruck.  
*IEEE Annual Workshop on Fault Tolerant Parallel and Distributed System (IPDPS '99)*, San Juan, Puerto Rico, 1999. Published in D.E. Avresky Ed., *Dependable Network Computing*, Kluwer, 1999.