

Curriculum Vitae: Giuseppe Caire

Personal Data

Date of Birth
Place of Birth
Citizenship
Web side URL:

Educational Background

1985 – 1990 5-year Engineering Degree, Politecnico di Torino, Italy
1991 – 1992 Master of Science, Princeton University, USA
1992 – 1994 Doctorate (Ph.D. degree), Politecnico di Torino, Italy

Employment History

4/2014 – present Full Professor, Technical University of Berlin, Germany
4/2014 – present Adjunct Professor, University of Southern California, Los Angeles CA
8/2005 – 3/2014 Full Professor, University of Southern California, Los Angeles, CA
9/1998 – 7/2005 Professor, Eurecom Institute, Sophia-Antipolis, France
9/1997 – 8/1998 Associate Professor, University of Parma, Italy
9/1995 – 8/1997 Assistant Professor, Politecnico di Torino, Italy
9/1994 – 8/1995 Research Fellow (Post-doctoral position) at the European Space Agency (ESA-ESTEC), The Netherlands

Visiting Positions

10/2017 – present International Visiting Professor, University of Parma
7/2011 – 8/2012 Visiting Researcher (Directeur de Recherche), with the L2S Department of CNRS, Paris, France
7/2000 – 10/2000 Visiting Professor, University of Sydney, Australia

Honors and Awards

2019 Leonard G. Abraham Prize for best IEEE JSAC paper
2018 ERC Advanced Grant of the European Research Council
2015 Vodafone Innovation Award
2013 Alexander von Humboldt Professorship
2011 *Joint IEEE Information Theory and IEEE Communications Society Best Paper Award*
2011 Marie Curie Fellowship of the EU, FP7-PEOPLE-2010-International Incoming Fellows
2006 Okawa Foundation Research Award
2005 Elected IEEE Fellow
2004 *Joint IEEE Information Theory and IEEE Communications Society Best Paper Award*
2003 IEEE Vehicular Technology Society *Jack Neubauer Best System Paper Award*

The Ten Most Important Publications (Articles in peer-reviewed international journals)

- Ji, M., Caire, G. and Molisch, A.F., “Wireless device-to-device caching networks: Basic principles and system performance,” *IEEE Journal on Selected Areas in Communications*, 34(1), pp.176-189, 2015. (2019 Leonard G. Abraham Prize).
- G. Caire and S. Shamai, “On the achievable throughput of a multiantenna Gaussian broadcast channel,” *IEEE Trans. on Inform. Theory*, Vol. 49, No. 7, pp. 1691 – 1706, 2003 (Best joint IT/Comsoc paper award, 2004).

- Caire, G.; Jindal, N.; Kobayashi, M.; Ravindran, N.; “Multiuser MIMO Achievable Rates With Downlink Training and Channel State Feedback,” *IEEE Transactions on Information Theory*, Vol. 56, No. 6, pp. 2845 - 2866, 2010 (Best joint IT/Comsoc paper award, 2011).
- G. Caire, G. Taricco, E. Biglieri, “Bit-interleaved coded modulation,” *IEEE Transactions on Information Theory*, 44 (3), 927-946.
- M. O. Damen, H. El Gamal, G. Caire, “On maximum-likelihood detection and the search for the closest lattice point,” *IEEE Transactions on Information Theory*, 49 (10), 2389-2402.
- G. Caire, D. Tuninetti, “The throughput of hybrid-ARQ protocols for the Gaussian collision channel,” *IEEE Transactions on Information Theory*, 47 (5), 1971-1988.
- Adhikary, A. ; Junyoung Nam ; Jae-Young Ahn ; Caire, G. “Joint Spatial Division and MultiplexingThe Large-Scale Array Regime,” *IEEE Trans. on Inform. Theory*, Vol. 59, No. 10, pp. 6441-6463, 2013.
- Hoon Huh; Caire, G.; Papadopoulos, H.C.; Ramprasad, S.A. “Achieving ”Massive MIMO” Spectral Efficiency with a Not-so-Large Number of Antennas,” *IEEE Trans. on Wireless Communications*, Vol. 11, No. 9, pp. 3226 - 3239, 2012.
- Kobayashi, M.; Jindal, N.; Caire, G.; “Training and Feedback Optimization for Multiuser MIMO Downlink,” *IEEE Trans. on Comm.*, Vol. 59, No. 8, pp. 2228 - 2240, 2011.
- G. Caire, R. Muller and T. Tanaka, “Iterative multiuser joint decoding: Optimal power allocation and low-complexity implementation,” *IEEE Trans. on Inform. Theory*, Vol. 50, No. 9, pp. 1950-1973, 2004.

Professional Societies:

IEEE Student Member, 1992, Member, 1994, Senior Member, 2003, IEEE Fellow 2005, Member of the IEEE Information Theory Society and Communication Society since 1992, Member of the Board of Governors of the IEEE Information theory Society from 2005 to 2014, **President of the IEEE Information Theory Society** in 2011 - 2012, Member of ITG-VDE and member of the special group 5.1 (applied information theory).

Technology Transfer Experience: the PI is the co-founder of SpaceMUX, a Silicon Valley startup developing distributed multiuser MIMO technology for enterprise WiFi networks. This generated key IP that was then acquired by Quantenna Inc. (QTNA:NASDAQ). The PI is also a member of the scientific advisory board of Artemis Networks, and collaborates with DoCoMo Innovations Labs in Palo Alto, with the Fraunhofer Heinrich Hertz Institute in Berlin, and with Huawei Munich. He is a co-inventor of more than 15 Patents.

Teaching and Supervision: the PI supervised 16 Ph.D students. Several of them have become successful academic researchers themselves: D. Tuninetti (full professor with Univ. Illinois Chicago). A. Nordio (Researcher with the Italian National Research Council), A. Guillen i Fabregas (ICREA professor with Univ. Pompeu Fabra, Barcelona, and recipient of an ERC consolidator grant in 2016), M. Kobayashi (professor at Centrale-Supelec, Paris), M. Ji (tenure-track Assist. prof. with the University of Utah), S.-N. Hong (tenure-track Assist. prof. with Ajou Univ., South Korea).

Scientific Community Service: General co-chair of IEEE ISIT 2007 and 2020, TPC co-chair of ISIT 2012 and 2019. Co-Ed. for the Sp. Issue on *BICM* of IEEE JSAC (2013), Co-Ed. for the Sp. Issue on *Massive MIMO* of the JCN, 2012. Co-Ed. for the Sp. Issue on *New Directions in Information Theory* of the ETT (2008), Assoc. Ed. of the IEEE Trans. on IT (2001–2003), Co-Ed. for the Special Issue on *Space-Time Transmission, Reception, Coding and Signal Processing*, IEEE Trans. on IT, 2003, Assoc. Ed. of *Foundations and Trends in Comm. and Inform. Technology*, (2003–present), Assoc. Ed. of *IEEE Trans. on Comm.*

- 1) Ji, M., Caire, G. and Molisch, A.F., "Wireless device-to-device caching networks: Basic principles and system performance,"
IEEE Journal on Selected Areas in Communications, 34(1), pp. 176-189, 2015. (2019 Leonard G. Abraham Prize).
CITATIONS: 469
- 2) G. Caire and S. Shamai, "On the achievable throughput of a multiantenna Gaussian broadcast channel,"
IEEE Trans. on Inform. Theory, Vol. 49, No. 7, pp. 1691-1706, 2003 (Best joint IT/Comsoc paper award, 2004).
CITATIONS: 2760
- 3) Caire, G.; Jindal, N.; Kobayashi, M.; Ravindran, N.; "Multiuser MIMO Achievable Rates With Downlink Training and Channel State Feedback,"
IEEE Transactions on Information Theory, Vol. 56, No. 6, pp. 2845 - 2866, 2010 (Best joint IT/Comsoc paper award, 2011). CITATIONS: 565
- 4) G. Caire, G. Taricco, E. Biglieri,
"Bit-interleaved coded modulation,"
IEEE Transactions on Information Theory, 44 (3), 927-946.
CITATIONS: 2903
- 5) M. O. Damen, H. El Gamal, G. Caire,
"On maximum-likelihood detection and the search for the closest lattice point,"
IEEE Transactions on Information Theory, 49 (10), 2389-2402.
CITATIONS: 1491
- 6) G. Caire, D. Tuninetti,
"The throughput of hybrid-ARQ protocols for the Gaussian collision channel,"
IEEE Transactions on Information Theory, 47 (5), 1971-1988.
CITATIONS: 673
- 7) Adhikary, A. ; Junyoung Nam ; Jae-Young Ahn ; Caire, G.
"Joint Spatial Division and Multiplexing: The Large-Scale Array Regime,"
IEEE Trans. on Inform. Theory, Vol. 59, No. 10, pp. 6441-6463, 2013.
CITATIONS: 879
- 8) Hoon Huh; Caire, G.; Papadopoulos, H.C.; Ramprasad, S.A.
"Achieving "Massive MIMO" Spectral Efficiency with a Not-so-Large Number of Antennas,"
IEEE Trans. on Wireless Communications, Vol. 11, No. 9, pp. 3226 - 3239, 2012.
CITATIONS: 416
- 9) Kobayashi, M.; Jindal, N.; Caire, G.;
"Training and Feedback Optimization for Multiuser MIMO Downlink,"
IEEE Trans. on Comm., Vol. 59, No. 8, pp. 2228 - 2240, 2011.
CITATIONS: 175
- 10) G. Caire, R. Muller and T. Tanaka,
"Iterative multiuser joint decoding: Optimal power allocation and low-complexity implementation,"
IEEE Trans. on Inform. Theory, Vol. 50, No. 9, pp. 1950-1973, 2004.
CITATIONS: 375