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ANTONIO ABRAMO

CURRICULUM VITAE AND PUBLICATIONS

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PERSONAL CONTACTS

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ESSENTIAL CHRONOLOGY

2020 -	Member of the Spin-off Committee; University of Udine, Italy
2017 - 2018	Deputy Rector for Technology Transfer; University of Udine, Italy
2017 -	Member of the Regional Technical Committee for Industrial Research funding
2016 - 2017	Deputy Rector for Patents; University of Udine, Italy
2013 - 2016	Member of the Patent Committee; University of Udine, Italy
2008 - 2018	Director - ETH Lab, Eurotech Group (http://www.ethlab.com ǀ http://www.eurotech.com)
2000 -	Associate Professor of Electronics - School of Engineering, University of Udine, Italy
2008 - 2013	Scientific Director - PTLab, Agemont, Italy (http://www.pervasivelab.agemont.it)
1997 - 2000	Assistant Professor of Electronics School of Engineering, University of Udine, Italy
1995 - 1997	PostDoc - Department of Physics - University of Modena, Italy
1995	Ph.D. in Electronics Engineering - University of Bologna, Italy
1990	Beginning of his scientific activity - DEIS, University of Bologna, Italy
1987	Laurea degree in Electronic Engineering (magna cum laude) - University of Bologna, Italy
1962	Born in Bologna, August 16.

INTERNATIONAL EXPERIENCE

2000	Visiting Professor, Center for Integrated Systems, Stanford University, Palo Alto (CA), USA
1993 - 1994	Visiting Scholar, Technology Research Department, AT&T Bell Labs, Murray Hill (NJ),USA
1992	Summer Job, Technology CAD Group, Intel Corporation, Santa Clara (CA), USA
1991	Visiting Scholar, Technology Research Department, AT&T Bell Labs, Murray Hill (NJ),USA

TEACHING ACTIVITY

Embedded Systems, Microprocessor Architectures, Parallel Architectures, Electronics. and Electron Device Physics.

NOTES

Antonio Abramo is Senior Member of the IEEE.

IEDM 2001 - International Electron Device Meeting, Washington, D.C., USA, Dec. 2001:
Member of the Technical Committee “Modeling and Simulation”.

IEDM 2002 - International Electron Device Meeting, S. Francisco (CA), USA - Dec. 2002:
Member of the Technical Committee “Modeling and Simulation”.

IEDM 2003 - International Electron Device Meeting, Washington, D.C., USA, Dec. 2003:
Chair of the Technical Committee “Modeling and Simulation”.

ICST 2011 - International Conference on Sensing Technology, Palmerston North, NZ, Nov. 2011:
Member of the International Program Committee.

FUNDING ACHIEVEMENTS

- Italian Technology Cluster on “Assisted Living” - Research Action on "Smart Cities / Smart Environments"
  (D4All (Design for All) project; Project amount: 11 MEuros; Unit amount: 580 kEuros)
- ARTEMIS Technology Platform
  (nSHIELD project; Project amount: 13 MEuros; Unit amount: 360 kEuros)
- Eniac Technology Platform
  (E2SG project; Project amount: 36 MEuros; Unit amount: 1.2 MEuros)
- Eniac Technology Platform
  (END project; Project amount: 12 MEuros; Unit amount: 50 kEuro)
- Funding from the Region Government for the creation of a Pervasive Computing Laboratory
  (Total amount: 650 kEuro; Duration: three years)

- Funding from the Region Government for the development of assisted living devices and infrastructure (Project amount: 1.9 MEuros; Unit amount:190 kEuros; Duration: two years)
- Funding from the Region Government for the development of Green Computing infrastructures (Project amount: 1.9 MEuros; Unit amount: 80 kEuros; Duration: two years)
- Research Project of National Interest (PRIN) on autonomic computation (Project amount: 132 kEuro; Unit amount: 51 kEuro; Duration: two years)

LIST OF PUBLICATIONS

INTERNATIONAL JOURNALS

[IJ01] A. Abramo, F. Venturi, E. Sangiorgi, C. Fiegna, B. Riccò, R. Brunetti, W. Quade, C. Jacoboni, "A multi-band model for hole transport in silicon at high energies", Semiconductor Science and Technology, 7, B597 (1992).

[IJ02] A. Abramo, F. Venturi, E. Sangiorgi, J.M. Higman, B. Riccò, "A numerical method to compute isotropic band models from anisotropic semiconductor band structures", IEEE Transaction on Computer-Aided Design, 12, 1327 (1993).

[IJ03] A. Abramo, L. Baudry, R. Brunetti, R. Castagné, M. Charef, F. Dessenne, P. Dolfus, R. Dutton, W.L. Engl, R. Fauquembergue, C. Fiegna, M.V. Fischetti, S. Galdin, N. Goldsman, M. Hackel, C. Hamaguchi, K. Hess, K. Hennacy, P. Hesto, J.M. Higman, T. Iizuka, C. Jungemann, Y. Kamakura, H. Kosina, T. Kunikiyo, S. Laux, H. Lin, C. Maziar, H. Mizuno, H.J. Peifer, S. Ramaswamy, N. Sano, P.G. Scrobohaci, S. Selberherr, M. Takenaka, T-W. Tang, K. Taniguchi, J.L. Thobel, R. Thoma, K. Tomizawa, M. Tomizawa, T. Vogelsang, S-L. Wang, X. Wang, C-S. Yao, P.D. Yoder, A. Yoshii, "A comparison of numerical solutions of the Boltzmann Transport Equation for high energy electron transport silicon", IEEE Transaction on Electron Devices, 41, 1646 (1994).

[IJ04] A. Abramo, R. Brunetti, C. Jacoboni, F. Venturi, E. Sangiorgi, "A multi-Band Monte Carlo approach to Coulomb interaction for device analysis", Journal of Applied Physics, 76, 5786 (1994).

[IJ05] A. Abramo, J. Bude, F. Venturi, M.R. Pinto, "Mobility simulation of a novel Si/SiGe FET structure", IEEE Electron Device Letters, 17, 59 (1996).

[IJ06] A. Abramo, P. Casarini, C. Jacoboni, "Phase time for coherent transport in two-dimensional structures", Applied Physics Letters, 69, 629 (1996).

[IJ07] A. Abramo, C. Fiegna, "Electron energy distributions in silicon structures at low applied voltages and high electric fields", Journal of Applied Physics, 80, 889 (1996).

[IJ08] P. Bordone, A. Abramo, R. Brunetti, M. Pascoli, C. Jacoboni, "Wigner-function for open systems with electron-phonon interaction", Physica Status Solidi B, 204, 303 (1997).

[IJ09] I. Ferretti, A. Abramo, R. Brunetti, C. Jacoboni, "Full-band Monte Carlo analysis of hot-carrier light emission in GaAs", Physica Status Solidi B, 204, 538 (1997).

[IJ10] C. Fiegna, A. Abramo, "Analysis of quantum effects in non-uniformly doped MOS structure", IEEE Transaction Electron Devices, 45, 877 (1998).

[IJ11] C. Jacoboni, A. Abramo, P. Bordone, R. Brunetti, M. Pascoli, "Application of the Wigner-function formulation to mesoscopic systems in presence of the electron-phonon interaction", VLSI Design, 8, 185 (1998).

[IJ12] P. Bordone, M. Pascoli, R. Brunetti, A. Bertoni, C. Jacoboni, A. Abramo, "Quantum transport of electrons in open nanostructures with the Wigner-function formalism", Physical Review B, 59, 3060 (1999).

[IJ13] M.G. Betti, V. Corradini, V. De Renzi, C. Mariani, P. Casarini, A. Abramo, "Density of states of a two-dimensional electron gas measured by high resolution photoelectron spectroscopy", Solid State Communications, 110, 661 (1999).

[IJ14] A. Abramo, A. Cardin, L. Selmi, E. Sangiorgi, "Two-dimensional quantum mechanical simulation of charge distribution in silicon MOSFETs", IEEE Transaction Electron Devices, 47, 1858 (2000).

[IJ15] J.-S. Goo, C.-H. Choi, A. Abramo, J.-G. Ahn, Z. Yu, T. H. Lee, R. W. Dutton, "Physical origin of the excess thermal noise in short channel MOSFETs", IEEE Electron Device Letters, 22, 101 (2001).

[IJ16] A. Dalla Serra, A. Abramo, P. Palestri, L. Selmi, F. Widdershoven, "Closed- and open-boundary models for gate-current calculation in MOS devices", IEEE Transaction Electron Devices, 48, 1811 (2001).

[IJ17] M.G. Betti, V. Corradini, G. Bertoni, P. Casarini, C. Mariani, A. Abramo, "Density of states of a two-dimensional electron gas at semiconductor surfaces", Physical Review B, 63, 155315, (2001).

[IJ18] S. Zanchetta, A. Todon, A. Abramo, L. Selmi and E. Sangiorgi,
"Analytical and numerical study of the impact of HALOS on short channel and hot carrier effects in scaled MOSFETs",
Solid State Electronics, 46, 429 (2002).

[IJ19] P. Palestri, A. Dalla Serra, L. Selmi, M. Pavesi , P. Rigolli, A. Abramo, F. Widdershoven, E. Sangiorgi,
"A comparative analysis of substrate current generation mechanisms in tunneling MOS capacitors",
IEEE Transaction Electron Devices, 49, 1427 (2002).

[IJ20] E. Sangiorgi, P. Palestri, D. Esseni, C. Fiegna, A. Abramo, L. Selmi,
"Device simulation for decananometer MOSFETs",
Material Science in Semiconductor Processing, 6, 93 (2003).

[IJ21] A. Abramo,
"Modeling electron transport in MOSFET devices: evolution and state of the art",
International Journal of High Speed Electronics and Systems, 13, 701 (2003). (Invited paper)

[IJ22] D. Esseni, A. Abramo,
"Modeling of electron mobility degradation by remote Coulomb scattering in ultra-thin oxide MOSFETs",
IEEE Transaction Electron Devices, 50, 1665 (2003).

[IJ23] D. Esseni, A. Abramo, L. Selmi, E. Sangiorgi,
"Physically based modeling of low field electron transport in ultra-thin single- and double-gate SOI n-MOSFETs",
IEEE Transaction Electron Devices, 50, 2445 (2003).

[IJ24] D. Esseni, A. Abramo,
"Mobility modeling of SOI MOSFETs",
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[IJ25] M. Martincigh, A. Abramo,
"A new architecture for digital stochastic pulse-mode neurons based on the voting circuit",
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[IJ26] A. Abramo, F. Blanchini, L. Geretti, C. Savorgnan,
"A mixed convex/non-convex distributed localization approach for the deployment of indoor positioning services",
IEEE Transaction on Mobile Computing, 7, 1325 (2008)

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"The Correspondence Between deterministic and stochastic digital neurons: analysis and methodology",
IEEE Transaction on Neural Networks, 19, 1739 (2008).

[IJ28] P. Merlino, A. Abramo,
"A fully pipelined architecture for the LOCO-I compression algorithm",
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"An integrated sensing/communication architecture for structural health monitoring",
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"Distributed multi-level hierarchic strategy for broadcast collaborative mobile networks",
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[IJ31] C. Cavallotti, P. Merlino, M. Vatteroni, P. Valdastri, A. Abramo, A. Menciassi, P. Dario,
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[IJ32] T. Aminosharieh Najafi, A. Abramo, K. Kyandoghere, Antonio Affanni,
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"Hot-holes generation and transport in n-MOSFETS: a Monte Carlo investigation",
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[IC02] C. Fiegna, E. Sangiorgi, F. Venturi, A. Abramo, B. Riccò,
"Optimization of physical parameters for high energy transport simulation in Si based on efficient electron energy distribution calculation",
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[IC03] A. Abramo, C. Fiegna, F. Venturi, R. Brunetti, E. Sangiorgi, C. Bergonzoni, B. Riccò,
"A new microscopic model for hole transport in silicon with application to sub-micron LDD MOSFETs",
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[IC04] B. Riccò, E. Sangiorgi, F. Venturi, C. Fiegna, A. Abramo,
"Monte Carlo simulator for semiconductor devices",
VI SB Micro Technical Digest, 18, Belo Horizonte (Brazil), Aug. 1991. (Invited paper)

[IC05] F. Venturi, A. Abramo, E. Sangiorgi, J. Higman, C. Fiegna, B. Riccò,
"An isotropic best-fitting band model for electrons and hole transport in Silicon",
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[IC06] C. Fiegna, E. Sangiorgi, F. Venturi, A. Abramo, B. Riccò,
"Modeling of high energy electrons in n-MOSFETs",
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[IC07] F. Venturi, E. Sangiorgi, C. Fiegna, A. Abramo, F. Capasso,
"Non-local effects on the electron energy distribution in short devices under high-field conditions",
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[IC08] A. Abramo, F. Venturi, E. Sangiorgi, J.M. Higman, C. Fiegna, B. Riccò,
"A numerical method to compute isotropic band models from anisotropic semiconductor band structures",
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[IC09] A. Abramo, F. Venturi, E. Sangiorgi, C. Fiegna, B. Riccò,
"Device simulation of small silicon MOSFET's using the Monte Carlo method",
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[IC10] P. Vitanov, M. Nedjalkov, C. Jacoboni, F. Rossi, A. Abramo,
"Unified Monte Carlo approach to the Boltzmann and Wigner equations",
Workshop on Parallel Algorithms Technical Digest, 117, Sofia, Aug. 1992. (Invited paper)

[IC11] E. Sangiorgi, C. Fiegna, A. Abramo,
"Modeling of high energy transport in silicon by means of the Monte Carlo method",
SMS Technical Digest, 17, Taipei, Taiwan, Mar. 1993. (Invited paper)

[IC12] C.-S. Yao, D. Chen, R.W. Dutton, F. Venturi, E. Sangiorgi, A. Abramo,
"An efficient impact ionization model for silicon Monte Carlo simulation",
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[IC13] A. Abramo, R. Brunetti, C. Jacoboni, F. Venturi,
"Monte Carlo simulation of carrier-carrier interaction in silicon devices",
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[IC14] A. Ghetti, L. Selmi, E. Sangiorgi, A. Abramo, F. Venturi,
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[IC15] A. Abramo, J. Bude, F. Venturi, M.R. Pinto,
"Mobility simulation in Si/SiGe heterostructure FETs",
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[IC16] A. Abramo, J. Bude, F. Venturi, M.R. Pinto, E. Sangiorgi,
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[IC17] A. Abramo, C. Fiegna, F. Venturi,
"Hot carrier effects in short MOSFETs at low applied voltages",
IEDM Technical Digest, 301, Washington, DC (USA), Dec. 1995.

[IC18] A. Abramo, P. Casarini, C. Jacoboni,
"Transmission properties of resonant cavities and rough quantum wells",
HCIS Technical Digest, 509, Chicago, IL (USA), Aug. 1996.

[IC19] C. Fiegna, A. Abramo,
"Optimization of channel profiles for ultra-short MOSFETs by quantum simulation",
IEDM Technical Digest, 815, S. Francisco, CA (USA), Dec. 1996.

[IC20] A. Abramo,
"A general purpose 2D Schrödinger solver with open/closed boundary conditions for quantum device analysis", SISPAD Technical Digest, 105, Boston, MA (USA), Sep. 1997.

[IC21] C. Fiegna, A. Abramo,
"Solution of 1-D Schrödinger and Poisson equations in single and double gate SOI MOS",
SISPAD Technical Digest, 93, Boston, MA (USA), Sep. 1997.

[IC22] A. Abramo, C. Fiegna, P. Casarini,
"Quantum effects in the simulation of conventional devices",
SISPAD Technical Digest, 121, Leuven, (Belgium), Sep. 1998. (Invited paper)

[IC23] C. Fiegna, A. Abramo, E. Sangiorgi,
"Simulation study of the impact of channel doping profiles on MOSFET analog performance",
ESSDERC Technical Digest, 688, Leuven, (Belgium), Sep. 1999.

[IC24] A. Abramo, A. Cardin, L. Selmi, E. Sangiorgi,
"Two-dimensional quantum simulation of silicon MOSFETs",
ISDRS Technical Digest, 77, Charlottesville, VA (USA), Dec. 1999.

[IC25] A. Todon, L. Selmi, A. Abramo, E. Sangiorgi,
"On the optimization of HALOs for 0.1 mm MOSFETs and below",
ISDRS Technical Digest, 41, Charlottesville, VA (USA), Dec. 1999.

[IC26] A. Abramo, A. Cardin, L. Selmi, E. Sangiorgi,
"Two-dimensional quantum mechanical aspects in the charge distribution of ULSI silicon MOSFETs", ULIS 2000 Technical Digest, 107, Grenoble, (FR), Jan 2000.

[IC27] A. Todon, L. Selmi, A. Abramo, E. Sangiorgi,
"Short channel and hot carrier performance of ULSI MOSFETs with halo structures",
ULIS 2000 Technical Digest, 111, Grenoble, (FR), Jan. 2000.

[IC28] A. Abramo, L. Selmi, Z. Yu, R. W. Dutton,
"Well-Tempered MOSFETs: 1D versus 2D quantum analysis",
SISPAD Technical Digest, 188, Seattle, WA (USA), Sep. 2000.

[IC29] A. Dalla Serra, A. Abramo, P. Palestri, L. Selmi,
"A comparison between semi-classical and quantum-mechanical escape-times for gate current calculations", ESSDERC Technical Digest, 340, Cork, (IR), Sep. 2000.

[IC30] P. Palestri, M. Pavesi, P. Rigolli,
L. Selmi, A. Dalla Serra, A. Abramo, F. Widdershoven, E. Sangiorgi,
"Impact ionization and photon emission in MOS capacitors and FETs",
IEDM Technical Digest, 97, S. Francisco, CA (USA), Dec. 2000.

[IC31] C. Fiegna, A. Abramo,
"Simulation of tunneling gate currents in ultra-thin SOI MOSFETs",
ISDRS Technical Digest, 110, Washington DC (USA), Dec. 2001.

[IC32] D. Esseni, A. Abramo,
"An improved model for electron mobility degradation by remote Coulomb scattering in ultra-thin oxide MOSFETs", ESSDERC Technical Digest, 183, Florence, (IT), Sep. 2002.

[IC33] R. Clerc, P. Palestri, A. Abramo,
"Investigation on convergence and stability of self-consistent Monte Carlo device simulations",
ESSDERC Technical Digest, 191, Florence, (IT), Sep. 2002.

[IC34] D. Esseni, A. Abramo, L. Selmi, E. Sangiorgi,
"Study of low field electron transport in ultra-thin single and double gate SOI MOSFETs",
IEDM Technical Digest, 719, S. Francisco, CA (USA), Dec. 2002.

[IC35] P. Palestri, D. Esseni, A. Abramo, R. Clerc, L. Selmi,
"Carrier quantization in SOI MOSFETs using an effective potential based Monte Carlo tool",
ESSDERC Technical Digest, 407, Lisbona, Sept. 2003.

[IC36] L. Lucci, D. Esseni, J. Loo, Y. Ponomarev, L. Selmi, A. Abramo, E. Sangiorgi,
"Quantitative assessment of mobility degradation by remote Coulomb scattering in ultra-thin oxide MOSFETs: measurements and simulations",
IEDM Technical Digest, 463, Washington, DC (USA), Dec. 2003.

[IC37] M. Martincigh, A. Abramo,
"A new stochastic neuron architecture for efficient FPGA implementation",
Austrochip Technical Digest, 95, Villach (Austria), Oct. 2004.

[IC38] A. Abramo, F. Blanchini, L. Geretti, C. Savorgnan,
"Mixed convex/non-convex distributed localization algorithm for the deployment of indoor positioning services", American Control Conference Technical Digest, 3967 (2007).

[IC39] C. Cavallotti, P. Merlino, E. Susilo, M. Vatteroni, P. Valdastri, A. Abramo, A. Menciassi, P. Dario,
"An FPGA-based flexible demo-board for endoscopic capsule design optimization",
Eurosensors XXIV Technical Digest - Elsevier Procedia Engineering, 70 (2010).

[IC40] M. Vatteroni , C. Cavallotti, P. Valdastri, A. Menciassi, P. Dario, P. Merlino, A. Abramo,
"Vision system for high frame rate wireless capsule endoscope",
IEEE Sensors 2011 Technical Digest, 809 (2011).

[IC41] A. Guerrieri , L. Geretti, G. Fortino, A. Abramo,
"A service-oriented gateway for remote monitoring of building sensor networks",
IEEE CAMAD Technical Digest, 139 (2012).

CONTRIBUTIONS IN COLLECTIONS

[IB01] A. Abramo, R. Brunetti, C. Fiegna, C. Jacoboni, B. Riccò, E. Sangiorgi, F. Venturi, In "Monte Carlo simulation of silicon devices", Elsevier Science Publishers B.V., Amsterdam, G. Baccarani Ed., 155 (1993).

[IB02] C. Jacoboni, A. Abramo, R. Brunetti, "Monte Carlo simulation of hot electrons in semiconductor devices", In "Hot electrons in semiconductors: physics and devices", Oxford University Press, N. Balkan Ed., 429 (1998). (Invited contribution)

[IB03] C. Fiegna, A. Abramo, E. Sangiorgi, "Single- and double-gate SOI MOS structures for future ULSI: a simulation study", In "Future trends in microelectronics", Wiley, S. Luryi, J. Xu, A. Zaslavsky Eds., 115, (1999).

[IB04] P. Palestri, L. Selmi, A. Dalla Serra, A. Abramo, E. Sangiorgi, M. Pavesi, P. Rigolli, F. Widdershoven, "Advanced physically based device modeling for gate current and hot carrier phenomena in scaled MOSFETs". In "Future trends in microelectronics", Wiley, S. Luryi, J. Xu, A. Zaslavsky Eds., 99, (2002).

[IB05] A. Abramo, "Modeling electron transport in MOSFET devices: evolution and state of the art", In "Advanced Device Modeling and Simulation", Word Scientific Publishing Company, T. Grasser Ed., 1, (2003). (Invited contribution)

[IB06] L. Geretti, A. Abramo, "The synthesis of stochastic artificial neural network application using a genetic algorithm approach". In "Advances in Imaging and Electron Physics", Wiley, Academic Press, P.W. Hawkes Ed., 1, (2011). (Invited contribution)

[IB07] P. Merlino, A. Abramo, "Deformation detection in Structural Health Monitoring". In "Developments in Sensing Technology for Structural Health Monitoring - Lecture Notes in Electrical Engineering", Springer, S.C. Mukhopadhyay Ed., 96, 41, (2011). (Invited contribution)

[IB08] P. Azzoni, K. Rantos, L. Geretti, A. Abramo, S. Gosetti, "Biometric security domain", In "Measurable and composable security, privacy and dependability: the SHIELD Methodology", CRC Press, A. Fiaschetti, J. Noll, P. Azzoni, R. Uribeetxeberria Eds., 29 (2018).

[IB09] P. Azzoni, L. Geretti, A. Abramo, K. Stefanidis, J. Gialelis, A. Papalambrou, D. Serpanos, K. Rantos, A. Toma, N. Tassadaq, K. Dabcevic, C. Regazzoni, L. Marcenaro, M. Traversone, M. Cesena, S. Mignanti, "Security, privacy, and dependability technologies", In "Measurable and composable security, privacy and dependability: the SHIELD Methodology", CRC Press, A. Fiaschetti, J. Noll, P. Azzoni, R. Uribeetxeberria Eds., 283 (2018).

RESEARCH REPORTS

[IR01] A. Abramo, J. Bude, F. Venturi, M.R. Pinto, "Mobility simulation in Si/SiGe heterostructure FETs", AT&T Technical Memorandum, 11125-941004-22TM (38543), Oct. 4, 1994.

ITALIAN JOURNALS AND BOOKS

[IN01] A. Abramo, "Il miracolo dell'ubiquità", Rassegna Tecnica del Friuli-Venezia Giulia, 3, 19 (2006). (Invited paper)

[IN02] A. Abramo, R. Siagri, "La tecnologia dell'informazione e i servizi per l'accessibilità" In: "Accessibilità e valorizzazione dei beni culturali", 382.4, 87 (Franco Angeli) (2012)

INTERNATIONAL WORKSHOPS

[IW01] A. Abramo, "Quantum effects and limits in device scaling" Workshop "Challenges in Advanced Electronic Device Simulation" Seattle, WA (USA), Sep. 2000. (Invited panelist)

PATENTS

[IP01] M. Carrer, C. De Alti, D. Rughetti, A. Abramo, S. Adami, "System and method for trusted provisioning and authentication for networked devices in Cloud-based IOT/M2M platforms", Sep. 29, 2016.