

Curriculum



Nome Name:	ANDREA
Cognome Surname:	BALLO

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Sito WEB WEB site:	https://www.dieei.unict.it/corsi/l-8-ele/docenti/andrea.ballo

POSIZIONE PROFESSIONALE ATTUALE / CURRENT PROFESSIONAL POSITION:

Posizione attuale Current position:	In Servizio
Qualifica Qualification:	Ricercatore a t.d. - t.pieno (art. 24 c.3-a L. 240/10)
Ateneo/Ente/Azienda University/Institution/Company:	Università degli Studi di CATANIA
Nazione Ateneo/Ente/Azienda University/Institution/Company Country:	ITA
Anno inizio Start Year:	2022
Anno fine End Year:	2026

PRECEDENTI ESPERIENZE LAVORATIVE (ULTIMI 10 ANNI) / PREVIOUS WORK EXPERIENCE (LAST 10 YEARS):

Qualifica Qualification:	Contratto di ricerca (art.22 L.79/2022)
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Ateneo/Ente/Azienda University/Institution/Company	Università degli Studi di CATANIA
Posizione Sede Lavorativi (indicare Nazione e Città) Workplace Location (specify Country and City):	n.d.
Anno inizio Start Year:	2021
Anno fine End Year:	2022
Descrizione Description:	

LINGUE / LANGUAGES:

Lingua Language:	Italiano
Scrittura Writing:	madrelingua
Comunicazione Communication:	madrelingua

Lingua Language:	Inglese
Scrittura Writing:	B2
Comunicazione Communication:	B2

AREA/SETTORE SCIENTIFICO-DISCIPLINARE / AREA/SECTOR SCIENTIFIC-DISCIPLINARY

Area scientifico-disciplinare Area scientific-disciplinary:	Ingegneria industriale e dell'informazione
Area scientifico-disciplinare codice Area scientific-disciplinary code:	09
Settore scientifico-disciplinare codice Sector scientific-disciplinary code:	-Elettronica
Settore scientifico-disciplinare codice Sector scientific-disciplinary code:	-IINF-01/A

DESCRIZIONE DEI PRINCIPALI RISULTATI SCIENTIFICI CONSEGUITI NEGLI ULTIMI 10 ANNI (CON ANNESSO ELENCO DI MASSIMO 10 PUBBLICAZIONI) / DESCRIPTION OF THE MAIN SCIENTIFIC RESULTS ACHIEVED IN THE LAST 10 YEARS (WITH ATTACHED LIST OF MAXIMUM 10 PUBLICATIONS):

<p>Descrizione Description:</p>	<p><i>My research activities aimed to develop innovative power management integrated circuits (PMICs) for extracting micro-energies through various types of transducers. This has been made by implementing new fully-integrable converter topologies and analog circuits (like amplifiers, second-order active filters, current-controlled oscillators, analog comparators) for the working operations of the entire PMIC. Specifically, my research is focused on switched-capacitor (SC) converters which required the use of more comprehensive modeling approaches, which were introduced in our papers. To reduce the settling time of the converter in applications such as non-volatile memories, new topologies and optimization strategies leveraging the clock boosting technique and unconventional distribution of the capacitors forming the converter were proposed in 5 papers. New design strategies, topologies and control strategies for SC converters working in low-power high-efficiency applications were introduced in 3 papers. A similar effort was undertaken for blocks requiring efficient operation from very low voltages (on the order of a few hundred millivolts). For this purpose, extensive use of body biasing techniques or gate voltage boosting, which lowers the threshold voltage and improves the conductivity of the transistors used for capacitor switching and analog circuits, were discussed and exploited for introducing new topologies. More recently, particular attention has been given to energy harvesting from alternative sources, such as piezoelectric and RF transducers. In this domain, some topologies were proposed and implemented using deeply scaled technologies. A further research activity was focused on the design and development of a CMOS temperature sensor, whose architecture and conversion strategy enable rapid temperature measurement, output in digital format to the downstream unit, while maintaining compact size and low power consumption.</i></p>
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PUBBLICAZIONI / PUBLICATIONS:

<p>Anno della pubblicazione Year of publication:</p>	<p>2024</p>
<p>Citazione Citation:</p>	<p>Ballo A., Carvajal R. G., Grasso A. D., Lujan-Martinez C. I., Pennisi S., Venezia C. (2024). 0.35-V SR-Enhanced Bulk-Driven OTA for Loads up to 10 nF. IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS. I, REGULAR PAPERS, p. 1-9, ISSN: 1549-8328, doi: 10.1109/TCSI.2024.3395472</p>

<p>Anno della pubblicazione Year of publication:</p>	<p>2024</p>
<p>Citazione Citation:</p>	<p>Ballo, A., Grasso, A. D., Palumbo, G. (2024). A Current-Efficient Pseudo-3D Regulated Dickson Charge Pump. IEEE TRANSACTIONS ON POWER ELECTRONICS, p. 1-13, ISSN: 0885-8993, doi: 10.1109/TPEL.2024.3397791</p>

Anno della pubblicazione Year of publication:	2024
Citazione Citation:	Privitera M., Ballo A., Ali K., Grasso A. D., Alioto M. (2024). Sub- μ W Battery-Less and Oscillator-Less Wi-Fi Backscattering Transmitter Reusing RF Signal for Harvesting, Communications, and Motion Detection. IEEE JOURNAL OF SOLID-STATE CIRCUITS, p. 1-12, ISSN: 0018-9200, doi: 10.1109/JSSC.2024.3492390

Anno della pubblicazione Year of publication:	2024
Citazione Citation:	Marco Privitera, Alfio Dario Grasso, Andrea Ballo, Massimo Alioto (2024). 0.6-V, μ W-Power Four-Stage OTA With Minimal Components, and 100 \times Load Range. IEEE SOLID-STATE CIRCUITS LETTERS, vol. 7, p. 311-314, ISSN: 2573-9603, doi: 10.1109/LSSC.2024.3476194

Anno della pubblicazione Year of publication:	2024
Citazione Citation:	Venezia C., Ballo A., Grasso A. D., Rizzo A., Ribellino C., Pennisi S. (2024). 46-nA High-PSR CMOS Buffered Voltage Reference With 1.2-5 V and -40 $^{\circ}$ C to 125 $^{\circ}$ C Operating Range. IEEE TRANSACTIONS ON VERY LARGE SCALE INTEGRATION (VLSI) SYSTEMS, p. 1-11, ISSN: 1063-8210, doi: 10.1109/TVLSI.2024.3455428

Anno della pubblicazione Year of publication:	2023
Citazione Citation:	Aminzadeh H., Ballo A., Grasso A. D., Valinezhad M. M., Jamali M. (2023). Hybrid Cascode Frequency Compensation for Four-Stage OTAs Driving a Wide Range of CL. IEEE TRANSACTIONS ON VERY LARGE SCALE INTEGRATION (VLSI) SYSTEMS, vol. 31, p. 1665-1674, ISSN: 1063-8210, doi: 10.1109/TVLSI.2023.3313613

Anno della pubblicazione Year of publication:	2022
Citazione Citation:	Aminzadeh, H., Ballo, A., Valinezhad, M., Grasso, A. D. (2022). An Unconditionally Stable Three-Stage OTA. IEEE SOLID-STATE CIRCUITS LETTERS, vol. 5, p. 230-233, ISSN: 2573-9603, doi: 10.1109/LSSC.2022.3206892

Anno della pubblicazione Year of publication:	2023
Citazione Citation:	Ballo A., Grasso A. D., Palumbo G. (2023). Very-Low-Voltage Charge Pump Topologies for IoT Applications. IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS. I, REGULAR PAPERS, p. 1-10, ISSN: 1549-8328, doi: 10.1109/TCSI.2023.3259184

Anno della pubblicazione Year of publication:	2022
Citazione Citation:	Ballo A., Grasso A. D., Palumbo G., Tanzawa T. (2022). A Charge Loss Aware Advanced Model of Dickson Voltage Multipliers. IEEE ACCESS, vol. 10, p. 118082-118092, ISSN: 2169-3536, doi: 10.1109/ACCESS.2022.3218901

Anno della pubblicazione Year of publication:	2020
Citazione Citation:	Ballo A., Bruno G., Grasso A. D., Vaiana M. G. G. (2020). A Compact Temperature Sensor with a Resolution FoM of 1.82 pJ·K2. IEEE TRANSACTIONS ON INSTRUMENTATION AND MEASUREMENT, vol. 69, p. 8571-8579, ISSN: 0018-9456, doi: 10.1109/TIM.2020.2992839

DESCRIZIONE DEI PRINCIPALI PROGETTI DI RICERCA E PREMI CONSEGUITI NEGLI ULTIMI 10 ANNI (CON ANNESSO ELENCO DI MASSIMO 10 RISULTATI, INCLUDENDO, A TITOLO DI ESEMPIO, PRINCIPAL INVESTIGATOR O COORDINATORE LOCALE DI PROGETTI DI RICERCA COMPETITIVI NAZIONALI O INTERNAZIONALI, SIGNIFICATIVI PREMI CONSEGUITI PER LA PROPRIA ATTIVITÀ DI RICERCA)/ DESCRIPTION OF THE MAIN RESEARCH PROJECTS AND AWARDS AWARDED IN THE LAST 10 YEARS (WITH ATTACHED LIST OF MAXIMUM 10 ACHIEVEMENTS, INCLUDING, FOR EXAMPLE, PRINCIPAL INVESTIGATOR OR LOCAL COORDINATOR OF NATIONAL OR INTERNATIONAL COMPETITIVE RESEARCH PROJECTS, SIGNIFICANT AWARDS AWARDED FOR YOUR RESEARCH ACTIVITY):

Descrizione Description:	<ul style="list-style-type: none"> • From 2023, for two years in a row, included in the single-year list of the top 2% scientists by Stanford Elsevier. • June 2023 - national scientific qualification for the position of Associate Professor, sector 09/E3 - Electronics. • July 2021 - best Ph.D. thesis award 2020 in the field of electronic engineering (Ph.D. Thesis Award) by the Italian Society of Electronics (SIE). • 2016 - qualification to practice the profession and from the following year he has been enrolled in the Order of Italian Engineers.
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DESCRIZIONE DEI PRINCIPALI RISULTATI CONSEGUITI NEGLI ULTIMI 10 ANNI IN TERMINI DI SVILUPPO DI RETI E RELAZIONI SCIENTIFICHE NAZIONALI E INTERNAZIONALI (CON ANNESSO ELENCO DI MASSIMO 5 RISULTATI, INCLUDENDO, A TITOLO DI ESEMPIO, PARTECIPAZIONE O ORGANIZZAZIONE DI CONVEGNI NAZIONALI E INTERNAZIONALI; CONTRIBUTI A CONSORZI DI

RICERCA) / DESCRIPTION OF THE MAIN RESULTS ACHIEVED IN THE LAST 10 YEARS IN TERMS OF DEVELOPMENT OF NATIONAL AND INTERNATIONAL SCIENTIFIC NETWORKS AND RELATIONS (WITH ATTACHED LIST OF MAXIMUM 5 RESULTS, INCLUDING, FOR EXAMPLE, PARTICIPATION OR ORGANIZATION OF NATIONAL AND INTERNATIONAL CONFERENCES; CONTRIBUTIONS TO RESEARCH CONSORTIA):

<p>Descrizione Description:</p>	<ul style="list-style-type: none"> • <i>Novel CMOS amplifier topologies and compensation techniques. Payame Noor University (Teheran), ref. Prof. H. Aminzadeh. Number of joint publications: 3.</i> • <i>Power converters for energy harvesting. IC Design Lab of Shizuoka University (Giappone), ref. Prof. T. Tanzawa. Number of joint publications: 3.</i> • <i>CMOS integrated temperature sensor development. Analog MEMS Group STMicroelectronics Catania (Italia), ref. Ing. G. Bruno. Number of joint publications: 2.</i> • <i>Ultra-low voltage analog circuits. Dipartimento di Ingegneria dell'informazione Elettronica e Telecomunicazioni dell'Università di Roma "La Sapienza", ref. Prof. G. Scotti. Number of joint publications: 2.</i> • <i>Development of electronic systems for cell dielectrophoresis and the monitoring of nanomaterial deposition. Istituto per la Microelettronica e Microsistemi (IMM) - CNR Catania (Italia), refs. Dott. M. Camarda, Dott.ssa S. Scalese e Dott. A. La Magna. Number of joint publications: 4.</i>
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<p>Descrizione Description:</p>	<p>2024 - Program committee co-chairs at DCIS 2024 (https://www.dcis2024.org/home), Italy.</p>
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DESCRIZIONE DEI PRINCIPALI RISULTATI CONSEGUITI NEGLI ULTIMI 10 ANNI IN TERMINI DI SUPPORTO ALLA COMUNITÀ SCIENTIFICA (CON ANNESSO ELENCO DI MASSIMO 5 RISULTATI, INCLUDENDO, A TITOLO DI ESEMPIO, RESPONSABILITÀ DI DIREZIONE DI COMITATI EDITORIALI; INCARICHI DI VALUTAZIONE DELLA RICERCA PRESSO ISTITUZIONI NAZIONALI O INTERNAZIONALI; RESPONSABILITÀ ISTITUZIONALI ALL'INTERNO DELL'ISTITUZIONE DI APPARTENENZA O DI ALTRE ISTITUZIONI) / DESCRIPTION OF THE MAIN RESULTS ACHIEVED IN THE LAST 10 YEARS IN TERMS OF SUPPORT TO THE SCIENTIFIC COMMUNITY (WITH ATTACHED LIST OF MAXIMUM 5 RESULTS, INCLUDING, FOR EXAMPLE, MANAGEMENT RESPONSIBILITIES OF EDITORIAL COMMITTEES; RESEARCH EVALUATION ROLES AT NATIONAL OR INTERNATIONAL INSTITUTIONS; INSTITUTIONAL

RESPONSIBILITIES WITHIN THE INSTITUTION OF AFFILIATION OR OTHER INSTITUTIONS):

Descrizione Description:	
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Descrizione Description:	From 2022 - associate editor for the journal "Journal of Circuits, Systems and Computers (JCSC)" - Word Scientific (ISSN: 0218-1266) and for the Open Access journal "Journal of Electrical Engineering (JEEE)" - Universal Wiser Publisher (UWP).
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Descrizione Description:	Guest editor for the following special issues: 2021-2022 - Advances in Low-Voltage Design Techniques for Scaled CMOS Technologies (MDPI - Applied Sciences); From 2022 - Power Management for Energy-Autonomous Nodes and Systems (MDPI - Applied Sciences); From 2022 - Ultra-Low Voltage and Ultra-Low Power Integrated Circuits and Systems Evolution (MDPI - Electronics); From 2024 - Fully-Integrated Low-Power Electronic Circuits and Systems for the Emerging Applications (Springer Nature - Discover Electronics); From 2024 - Selected Papers from XXXIX Conference on Design of Circuits and Integrated Systems - DCIS 2024 (IET Electronics Letters).
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DESCRIZIONE DEI PRINCIPALI RISULTATI CONSEGUITI NEGLI ULTIMI 10 ANNI IN TERMINI VALORIZZAZIONE DELLE CONOSCENZE (CON ANNESSO ELENCO DI MASSIMO 3 RISULTATI, RELATIVI ALLA PARTECIPAZIONE DEL CANDIDATO ALLE ATTIVITÀ DI VALORIZZAZIONE DELLE CONOSCENZE) / DESCRIPTION OF THE MAIN RESULTS ACHIEVED IN THE LAST 10 YEARS IN TERMS OF KNOWLEDGE VALORIZATION (WITH ATTACHED LIST OF MAXIMUM 3 RESULTS, RELATING TO THE CANDIDATE'S PARTICIPATION IN KNOWLEDGE VALORIZATION ACTIVITIES):

Descrizione Description:	
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Informazioni aggiornate alla data di candidatura 12-05-2025

ANDREA BALLO

Il presente curriculum costituisce allegato e parte integrante dell'incarico sottoscritto