



CURRICULUM VITAE (CVA)

IMPORTANT – The Curriculum Vitae cannot exceed 4 pages. Instructions to fill this document are available in the website.

Part A. PERSONAL INFORMATION

CV date 07/12/2021

First name	Alfredo		
Family name	Álvarez García		
Gender (*)	Male	Birth date (dd/mm/yyyy)	25/10/1957
Social Security, Passport, ID number	08780915K		
e-mail	aalvarez@unex.es	URL Web: https://www.unex.es/conoce-la-unex/centros/eii/	
Open Researcher and Contributor ID (ORCID) (*)	0000-0001-9552-1535		

(*) Mandatory

A.1. Current position

Position	Associate professor		
Initial date	01/08/2007		
Institution	University of Extremadura		
Department/Center	School of Industrial Engineering		
Country	Spain	Teleph. number	+34924289300
Key words	Electrical Applications of Superconductors		

A.2. Previous positions (research activity interruptions, art. 14.2.b))

Period	Position/Institution/Country/Interruption cause
1984-1986	Profesor Colaborador
1986-2000	Profesor TEU
2000-sigue	Profesor TU

A.3. Education

PhD, Licensed, Graduate	University	Year
PhD from University of Extremadura	University of Extremadura	May-1998
Degree in Physical Science	University of Extremadura	Sep-1995
Industrial Technical Engineer-Specialty of Electricity,	University of Extremadura	1981

Part B. CV SUMMARY (max. 5000 characters, including spaces)

As PI of the “Benito Mahedero” Group of Electrical Application of Superconductors, he has contributed to the development of the study and characterization of these new materials and their application in his field of the Electrical Engineering. The main contributions are related with the use of superconducting tapes and coils. The more advanced contribution is the design, construction, test and improvement of a new type of superconducting fault current limiter (SFCL) with two stages, one inductive and the other resistive, as well as its adaptation to distributed generation environments. The modular characteristic of this SFCL allows the



protection current level to be scaled to higher values than those obtainable in the group's laboratory. In this sense, the available test bench has been updated to be three-phase and allow faults of up to 2000A, both symmetrical and asymmetrical. One of the more important contributions in the design of SFCL was the optimization of magnetic screen, which has more applications in other fields. Other working line is the study of superconducting magnetic storage systems (SMES, Superconductor Magnetic Energy Storage). His contribution here is the study of SMES as a part of a hybrid storage system with batteries in order to improve the quality of electricity supply and increase the batteries life, mainly in distributed generation facilities.

He is the author of more than two dozen articles indexed in JCR. He has participated in 11 research projects, 7 of them in the last 10 years, most of them as principal investigator. He has presented more than 50 communications and papers at international conferences in the field of applied superconductivity. He has participated in the organization of congresses, as well as in scientific committees. He has given 8 invited conferences in different organizations and entities. He has supervised 4 doctoral theses, one of them with a European Doctor mention and Extraordinary Doctorate Award and two others in foreign universities. He is a University Professor in the area of Electrical Engineering, uninterruptedly teaching classes, since 1984, of different subjects within the area, at all university levels: degree, master and doctorate. He has directed several dozen end-of-degree projects for students of various degrees, as well as various doctoral research projects (DEA, dissertations, etc.). He has participated as a coordinator and collaborator in different activities to disseminate scientific culture within the Autonomous Community of Extremadura. He is the author of several popular science publications. He has held various management positions within the Uex.

Part C. RELEVANT MERITS (*sorted by typology*)

C.1. Publications (*see instructions*)

Roberto A. H. de Oliveira; João Murta-Pina; María Belén Rivera; Alfredo Álvarez; Stanimir Valtchev; Anabela G. Pronto; Pilar Suárez. "Effects of Noncharacteristic Harmonics on AC Losses of High-Temperature Superconducting Coils". IEEE Trans. On Power Electronics (36) 12, 2021. JCR: 6,153; Q1 (88.83).

Jaime Gómez, Belén Pérez, Pilar Suárez, Alfredo Álvarez, and Belén Rivera. "Theoretical and Experimental Studies of SMES Configurations for Design Optimization". IEEE Trans. On App. Supercond., (31) 5, 2021. JCR: 1,704; Q3 (31.32).

Rivera B., Álvarez A., Pérez B. "Design of a SFCL with an Inductive Stage in Series with a Resistive Stage Which Transits by Magnetic Field". IFIP Advances in Information and Communication Technology. 577, pp. 299-308. (2020). Springer. Print ISBN 978-3-030-45123-3.

Pedro Arsenio, Joao Murta-Pina, Anabela Pronto, Alfredo Alvarez and Isabel Catarino "Numerical and Experimental Analysis of an Inductive-Type Fault Current Limiter Using Short-Circuited 2G Tape", IEEE Trans. On App. Supercond., (28) 4, 2018. 8267204. JCR: 1,583; Q3 (78/148).

Nuno Vilhena, Joao Murta-Pina, Anabela Pronto, and Alfredo Álvarez, "A Design Methodology for the Optimization of Three-Phase SFCL of Saturated Cores Type", IEEE Trans. On App. Supercond., (28) 4, 2018. 8291579. JCR: 1,583; Q3 (78/148).

Joao Murta-Pina, J., Nuno Vilhena, Pedro Arsenio, Anabela Pronto and Alfredo Alvarez, "Preliminary Design and Test of Low-Resistance High Temperature Superconducting ShortCircuited Coils", IEEE Trans. On App. Supercond., (28) 4, 2018. 4604105. JCR: 1,583; Q3 (78/148).



Alfredo Álvarez, Pilar Suárez, Belén Pérez and Laura García. “Coated superconducting tape model based on distribution of currents between the tape layers. Computing implementation”. IEEE Trans. On App. Supercond., (28) 4, 2018. JCR: 1,583; Q3 (78/148).

Nuno Vilhena, Amanda Taillacq, Anabela Pronto, Joao Murta-Pina and Alfredo Álvarez. “Analysis of Electromagnetic Forces in Superconducting Fault-Current Limiters Under ShortCircuit Condition” IEEE Trans. On App. Supercond., VOL. 26, NO. 3, 2016; JCR: 1,092; Q3 (146/257).

Nuno Vilhena, Pedro Arsénio, João Murta-Pina, Anabela Pronto and Alfredo Álvarez. “A Methodology for Modeling and Simulation of Saturated Cores Fault Current Limiters”, IEEE Trans. On App. Supercond., VOL. 25, NO. 3, 2015. JCR: 1,092; Q3 (146/257).

José M. Ceballos, Alfredo Álvarez, Pilar Suárez, Nuno Amaro, and Belén Pérez. “Device for Measuring the Thermal Cycling Degradation in 2G Tapes for Electrical Power Applications” IEEE Trans. On App. Supercond., VOL. 25, NO. 3, 2015. JCR: 1,092; Q3 (146/257).

J. Murta-Pina, P. Pereira, J.M. Ceballos, A. Álvarez, N. Amaro, A. Pronto, J. Silva, P. Arsénio, “Validation and Application of Sand Pile Modeling of Multiseeded HTS Bulk Superconductors”, IEEE Trans. On App. Supercond., VOL. 25, NO. 3, 2015. JCR: 1,092; Q3 (146/257).

Inácio, D., Pina, J.M., Neves, M.V., Álvarez, A. “Disc motor with rotor made of aluminium or polycrystalline high temperature superconductor”, IFIP Advances in Information and Communication Technology, 450, pp. 415-422. (2015). Springer. Print ISBN 978-3-319-16765-7.

Inácio, D., Pina, J.M., Ceballos, J.M., Neves, M.V., Álvarez, A., “Experimental magnetic field mapping of a polycrystalline superconducting YBCO disc for an axial flux motor”, IFIP Advances in Information and Communication Technology, 450, pp. 467-474. (2015). Springer. Print ISBN 978-3-319-16765-7.

Vilhena, N., Arsénio, P., Murta-Pina, J., Pronto, A.G., Álvarez, A., “Development of a Simulink model of a saturated cores superconducting fault current limiter”, IFIP Advances in Information and Communication Technology, 450, pp. 415-422. (2015). Springer. Print ISBN 978-3-319-16765-7.

Nuno Amaro, João M. Pina, João Martins, José M. Ceballos, and A. Álvarez. “A Fast Algorithm for Initial Design of HTS Coils for SMES Applications” IEEE Trans. On App. Supercond., VOL. 23, NO. 3, 2013. JCR: 1,092; Q3 (146/257).

João M. Pina, Pedro Pereira, Daniel Valadas, José M. Ceballos, and A. Álvarez. “Sand Pile Modeling of Multiseeded HTS Bulk Superconductors: Current Densities Identification by Genetic Algorithms”, IEEE Trans. On App. Supercond., VOL. 23, NO. 3, 2013. JCR: 1,092; Q3 (146/257).

C.2. Congress

Oral contribution: Roberto Oliveira, João Murta-Pina, Anabela Pronto, Henrique Simas, Miguel Teixeira, Isabel Catarino, João Rosas, Masoud Ardestani, Alfredo Álvarez, Pilar Suarez, Belén Rivera, Belén Perez. “A Data Driven Methodology for Modeling Losses in HTS Power Systems”. 15th European Conference on Applied Superconductivity. Moscow, Russia. September 2021.



Poster: João Pinto, Roberto Oliveira, Fábio Gregório, João Murta-Pina, Anabela Pronto, Masoud Ardestani, Xavier Granados, Alfredo Álvarez, Pilar Suárez, Belén Rivera, Belén Pérez. “A Highly-Flexible Electromechanical Drive Integrating Electronic Poles Variation and HTS Coated Conductors Based Motors”. 15th European Conference on Applied Superconductivity. Moscow, Russia. September 2021.

Oral contribution: Alfredo Álvarez, Pilar Suárez, Belén Pérez and Belén Rivera. “ Study of the magnetic shielding of hollow cylindrical screens made with superconducting tape”. 2020 Applied Superconductivity Conference. Tampa, Florida. November 2020.

Poster: Jaime Gómez, Belén Pérez, Pilar Suárez, Alfredo Álvarez, Belén Rivera. “Theoretical and experimental studies of SMES configurations for design optimization”. 2020 Applied Superconductivity Conference. Tampa, Florida. November 2020.

C.3. Research projects

IB18076. Improvement of the Modular Inductive-Resistive Superconductor Fault Current Limiter for its integration in Distributed Generation Systems.

Entity: Government of Extremadura

Dates: 09/02/2019 09/02/2022 Amount: € 103.773

PI: Alfredo Álvarez García N^o researchers: 4

ENE2012-36479. Adaptation of the modular inductive-resistive SFCL for its integration in distributed generation systems. Scenario review.

Entity: Ministry of Economy and Competitiveness

Dates: 01/01/2013 12/31/2015 Amount: € 28.080

PI: Belén M^a Pérez Caballero N^o researchers: 5

9191797P. Modeling of a superconducting fault current limiter for distributed generation systems with renewable energies.

Entity: University of Extremadura

Dates: 24/10/2011 24/10/2012 Amount: € 6.000

PI: José M. Ceballos Martínez N^o researchers: 4

GR10150. Helps research groups

Entity: Government of Extremadura

Dates: 31/12/2010 31/12/2014 Amount: € 21.978

PI: Alfredo Álvarez García N^o researchers: 4

ENE2007-67426. Superconducting limiter for quality improvement in systems FACTS

Entity: Ministry of Science and Technology

Dates: 10/10/07 30/09/2011 Amount: € 4.400

PI: Alfredo Álvarez García N^o researchers: 4

C.4. Contracts, technological or transfer merits

Patent: INDUCTIVE-RESISTIVE MODULAR SUPERCONDUCTOR SHORT-CIRCUIT CURRENT LIMITING DEVICE WITH DOUBLE MAGNETIC FIELD TRANSITION.

Modular inductive-resistive short-circuit current limiting device with double magnetic field transition. Type: Invention Patent. Patent / Invention Summary. Application Number: P201031147.