



## 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

<b>CV date</b>	07/12/2021
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First name	Belén M <sup>a</sup>		
Family name	Pérez Caballero		
Gender (*)	Female	Birth date (dd/mm/yyyy)	01/05/1974
Social Security, Passport, ID number	9.197.678 R		
e-mail	belenpc@unex.es	URL Web: <a href="https://www.unex.es/conoce-la-unex/centros/eii/">https://www.unex.es/conoce-la-unex/centros/eii/</a>	
Open Researcher and Contributor ID (ORCID) (*)	0000-0003-0190-1524		

(\*) Mandatory

### A.1. Current position

Position	Associate professor		
Initial date	17/07/2018		
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
04/11/2002-08/06/2006	Profesor Ayudante (TC)
09/06/2006-30/06/2008	Profesor Colaborador
01/07/2008-16/07/2018	Profesor Contratado Doctor

### A.3. Education

PhD, Licensed, Graduate	University/Country	Year
PhD from University of Extremadura	University of Extremadura (Spain)	05/07/2008
Industrial Engineer	University of Extremadura (Spain)	30/03/2000

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

Since the beginning of my research in the "Benito Mahedero" Group of Electrical Applications of superconductors, my research has been developed under the line of development of superconducting electrical applications. In the last ten years, research has focused, firstly, on the study of AC losses presented by devices made up of coils of several layers of superconducting tape, and analysis of the influence of the variation of the transport currents (and hence associated magnetic fields) in the practical critical current of the tape under test. Subsequently, the research continues with the theoretical study of the magnetic field in space destined to house the rotor of a low-power axial-flow two-phase superconducting motor. Next, the research group begins the analysis of the superconducting limiter, and the study of the stabilized and unstabilized YBCO tape for use in the resistive stage of said limiter, analyzing



the cooling power, the value of the critical current, and the variation of this, and of the AC losses in the presence of magnetic fields. In this last stage, we are at the beginning of the analysis and prototyping of the superconducting SMES, with the aim of its future installation in the “clean energy” generation systems. All this research work has resulted in the publication of 15 articles in journals indexed, and participation in eleven international congresses, leaders in the research of superconducting materials (ASC and EUCAS). This research has been developed, with funds from the Extremadura community, and national, within the framework of seven competitive Research projects, being Principal Investigator, of the last one granted (ENE2012-36479), since 01/01/2013. Finally, I want to highlight the participation in the organization of two international congresses, meeting of researchers in superconductivity.

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

### **C.1. Publications** (*see instructions*)

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.

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).

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).

Pilar Suárez, Alfredo Álvarez, José M. Ceballos, and Belén Pérez. “Loss and Transition Studies of Shunted Free-Stabilized YBCO Tape for SFCL Applications”, IEEE Trans. On App. Supercond., VOL. 21, NO. 3, 2011, 1267-1270. JCR: 1,041; Q2 (120/245). Citas: 3

Pilar Suárez, Alfredo Álvarez, José M. Ceballos, and Belén Pérez. “An Experimental Study of the Ferromagnetic Loss in 2G YBCO Tapes”, IEEE Trans. On App. Supercond., VOL. 20, NO. 5, 2010, 2327-2330. JCR: 1,035; Q2 (120/247).

### **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*”. 15<sup>th</sup> 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*”. 15<sup>th</sup> 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.

**Poster:** Belén Pérez, Pilar Suárez, Alfredo Álvarez, João Murta-Pina, Anabela Pronto, Roberto Oliveira. “*Losses estimate in a new concept of inductive-resistive SFCL*”. 14<sup>th</sup> European Conference on Applied Superconductivity. Reino Unido. September 2019.

**Poster:** Alfredo Álvarez, Pilar Suárez and Belén Pérez. “*Study and modeling of superconducting tape non-linearity based on hysteresis functions*”. 2018 Applied Superconductivity Conference. Seattle, Washington. October 2018.

**Poster:** Pilar Suárez, Alfredo Álvarez and Belén Pérez. “*Comparison between superconducting bulks and coated conductor coils for magnetic levitation applications*”. 2018 Applied Superconductivity Conference. Seattle, Washington. October 2018.

**Oral contribution:** Alfredo Álvarez, Pilar Suárez, Belén Pérez, Joao Murta-Pina. “*Computing implementation of stabilized HTS tape model based on distribution of current etween the tape layers*”. 6<sup>th</sup> International Workshop on Numerical Modelling of High Temperature Superconducting. Caparica, Portugal. June 2018.

**Poster:** Alfredo Álvarez, Pilar Suárez, Belén Pérez and Laura García. “*Coated superconducting tape model based on distribution of currents between the tape layers*”. 13<sup>th</sup> European Conference on Applied Superconductivity. Ginebra, Suiza. September 2017.

### 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° 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<sup>a</sup> Pérez Caballero      N° 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° 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° 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° 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.