

**1. PERSONAL INFORMATION.**

**Surname:** Fernández Martínez

**Name:** Pablo

**Date of Birth:** 10/09/1980

**Place of Birth:** Oviedo (Asturias)

**Contact Address:** Travessera de Gràcia, 100, Ent 2º, 08012, Barcelona, Spain

**Affiliation:** Centro Nacional de Microelectrónica (IMB-CNM-CSIC)

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**2. EDUCATION.**

**Degree:** Degree in Physics from *Universidad de Zaragoza*, Spain (2005)

**Master:** Master in Micro and Nanoelectronics from *Escola Tècnica Superior d'Enginyeria (ETSE), Universitat Autònoma de Barcelona*, Spain (2008)

**Other Qualifications:**

- Postgraduate in Microsystems from *Departamento de Ingeniería Electrónica y Comunicaciones, Universidad de Zaragoza*, Spain (2006)
- Postgraduate in Computing and Communication Tools for Scientist from *Facultad de Ciencias, Universidad de Zaragoza*, Spain (2004)

**3. LANGUAGES.**

**Spanish:** Native

**English:** Advance

**French:** Intermediate

**Catalan:** Intermediate

**4. CURRENT PROFESSIONAL ACTIVITY.**

**Description:** PhD Student.

**Contract:** Associated Researcher (from 1/09/2010 to 31/12/2011)

**Organization:** Consejo Superior de Investigaciones Científicas (CSIC)

**Institution:** Instituto de Microelectrónica de Barcelona (IMB-CNM)

**Department:** System Integration

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## 5. PREVIOUS SCIENTIFIC OR PROFESSIONAL ACTIVITIES.

From 1/09/2006 to 31/08/2010: Spanish Government Investigation Fellowship (*TEC 2005-07511*)

From 1/03/2006 to 1/07/2006: Monitoring software designer for *Teltronic S.A.U.*

From 1/02/2005 to 1/07/2006: Contributor member of the *Electronic Design Group, Universidad de Zaragoza, Spain.*

## 6. SCIENTIFIC AND TECHNICAL SKILLS.

My research has been developed in two fields:

- Design and optimisation of Silicon Avalanche Photodiodes for direct X-ray detection.
- Study and simulation of the radiation effects on silicon devices, specifically power Lateral MOS devices.

### Specialization:

- Semiconductor materials, devices and technologies
- Device and technological simulation: Silvaco TCAD, Synopsys Sentaurus TCAD
- Clean Room technologies
- Electrical Characterization

### Organizational and management skill-promoting activities:

Activity: Organizational activity

Details: Participation to ISPSD 2009 as member of the organization team.

## 7. PUBLICATIONS

### 7.1. Referenced Publications

- 1.- P. Fernández-Martínez, G. Pellegrini, J.P. Balbuena, D. Quirion, S. Hidalgo, D. Flores, M. Lozano and G. Casse.  
**“Simulation of new P-type strip detectors with trench to enhance the charge multiplication effect in the n-type electrodes”**  
Submitted to Nuclear Instruments and Methods in Physics Research A, 2010.
- 2.- F.R. Palomo, P. Fernández-Martínez, J.M. Mogollón, S. Hidalgo, M.A. Aguirre, D. Flores, I. López-Calle, J.A. de Agapito.  
**“Simulation of Femtosecond Pulsed Laser Effects on MOS Electronics using TCAD Sentaurus Customized Models”**  
International Journal of Numerical Modelling: Electronic Networks, Devices and Fields, Vol. 23, 379-399, 2010.
- 3.- E.Graugés, A. Comerma, L. Garrido, D. Gascón, J. Trenado, A. Diéguez, A. Vilà, A. Arbat, L. Freixas, S. Hidalgo, P. Fernández, D. Flores, M. Lozano.  
**“Study of Geiger avalanche photo-diodes (GAPDs) applications to pixel tracking detectors”**  
Nuclear Instruments and Methods in Physics Research A, 617, p. 541-542, 2010.
- 4.- I. Cortés, P. Fernández-Martínez, D. Flores, S. Hidalgo, J. Rebollo.  
**“Superjunction LDMOS on thick-SOI technology for RF applications”**  
Microelectronics Journal. Vol 39, No. 6, p. 922-927, 2008

- 5.- I. Cortés, P. Fernández-Martínez, D.Flores, S. Hidalgo, J. Rebollo.  
**“Analysis of Punch-through Phenomena in Bulk Silicon RF Power LDMOS Transistors”**  
Microelectronics Reliability. Vol 48, p. 173-180, 2008
- 6.- I. Cortés, P. Fernández-Martínez, D.Flores, S. Hidalgo, J. Rebollo  
**“Analysis of low voltaje super-junction LDMOS structures on Thin-SOI substrates”**  
Semiconductor Science and Technology. Vol. 23, No. 1, p. 1 - 8, 2008.
- 7.- I. Cortés, P. Fernández-Martínez, D.Flores, S. Hidalgo, J. Rebollo  
**“Static and dynamic electrical performances of STI thin-SOI power LDMOS transistors”**  
Semiconductor Science and Technology. Vol. 23: 095024, 2008.
- 8.- I. Cortés, P. Fernández-Martínez, D.Flores, S. Hidalgo, J. Rebollo.  
**“The Thin-SOI TGLDMOS transistor: a suitable power structure for low voltage applications”**  
Semiconductor Science and Technology. Vol. 22, No. 10, p. 1183 - 1188, 2007.

## 7.2. Proceedings in International Conferences

- 1.- P. Fernández-Martínez, G. Pellegrini, M. Lozano, C. Fleta, D. Quirion, M. Ullan, S. Hidalgo, D. Flores and G. Casse.  
**“Simulation of new p-type strip detector with trench to enhance the charge multiplication effect in the n-type electrodes.”**  
8<sup>th</sup> International Conference on Radiation Effects on Semiconductor Materials Detectors and Devices (RESMDD'10), Florence (Italy), 12-15 October 2010
- 2.- P. Fernández-Martínez, F.R. Palomo, I. Cortés, S. Hidalgo, D. Flores.  
**“Dose Induced Breakdown in Lateral DMOS Devices”**  
11<sup>th</sup> European Conference on Radiation and its Effects on Components and Systems (RADECS 2010), Längenfeld (Austria), 20-24 September 2010
- 3.- P. Fernández-Martínez, S. Hidalgo, D. Flores, I. Cortés and M. Lozano.  
**“Fabrication of Thick Reach-Through Avalanche Photodiode Structures for Direct X-ray Detection”**  
10<sup>th</sup> International Seminar on Power Semiconductors (ISPS'10), Prague (Czech Rep.), 1-3 September 2010
- 4.- I. Cortés, P. Fernández-Martínez, D. Flores, S. Hidalgo and J. Rebollo.  
**“Análisis of trench gate power LDMOS transistors in thin SOI technology”**  
211th ECS Meeting, Chicago Illinois (United States). May 2007.
- 5.- I. Cortés, P. Fernández-Martínez, D. Flores, S. Hidalgo and J. Rebollo.  
**“On-resistance Analysis of Low-Voltage Super-Junction LDMOS Structures in Thin-SOI Substrates”**  
3<sup>rd</sup> Workshop of the Thematic Network on Silicon on Insulator Technology, Devices and Circuits (EUROSOL'07). Leuven (Belgium). January 2007.

## 7.3. Proceedings in National Conferences (Spain)

- 1.- P. Fernández-Martínez, I. Cortés, S. Hidalgo, D. Flores, G. Pellegrini and M. Lozano.  
**“Linear Mode Reach – Through Avalanche Photodiodes for Medium Energy X-ray Detection”** (Best paper award)  
8<sup>th</sup> Spanish Conference on Electronic Devices (CDE'11). Palma de Mallorca. February 2011.

- 2.- P. Fernández-Martínez, F.R. Palomo, I. Cortés, S. Hidalgo and D. Flores.  
***“Simulation of Total Ionising Dose in MOS Capacitors”***  
8<sup>th</sup> Spanish Conference on Electronic Devices (CDE'11). Palma de Mallorca. February 2011.
- 3.- I. Cortés, P. Fernández-Martínez, D. Flores, S. Hidalgo and J. Rebollo.  
***“Gain estimation of RT-APD devices by means of TCAD numerical simulations”***  
8<sup>th</sup> Spanish Conference on Electronic Devices (CDE'11). Palma de Mallorca. February 2011.
- 4.- A. Fontserè, A. Pérez-Tomás, M. Placidi, P. Fernández-Martínez, N. Baron, S. Chenot, Y. Cordier, J.C. Moreno, M.R. Jennings, P.M. Gammon and D. Walker.  
***“GaN Ohmic Contact Resistance vs. Temperature”***  
8<sup>th</sup> Spanish Conference on Electronic Devices (CDE'11). Palma de Mallorca. February 2011.
- 5.- P. Fernández-Martínez, I. López-Calle, S. Hidalgo, F.J. Franco, D. Flores, J.A. de Agapito.  
***“Comparison between Heavy Ion and Pulsed Laser Simulation to Reproduce SEE Tests”***  
7<sup>th</sup> Spanish Conference on Electronic Devices (CDE'09). Santiago de Compostela. February de 2009.
- 6.- P. Fernández-Martínez, J.M. Mogollón, S. Hidalgo, F.R. Palomo, D. Flores, M.A. Aguirre.  
***“Simulation Methods for Ionizing Radiation Single Event Effects Evaluation”***  
7<sup>th</sup> Spanish Conference on Electronic Devices (CDE'09). Santiago de Compostela. February de 2009.
- 7.- I. Cortés, P. Fernández-Martínez, D. Flores, S. Hidalgo and J. Rebollo.  
***“Punch-through Effects in RF Bulk LDMOS Transistors”***  
6<sup>th</sup> Spanish Conference on Electronic Devices (CDE'07). San Lorenzo de El Escorial, Madrid. February de 2007.