

Ander Zornoza Indart

Website: <http://www.linkedin.com/in/anderzornoza>



Current Occupation

➤ Interim Professor at EHU

Eibar, Spain, from October 2018

Research lines: Fiber optic sensors, Photonics, Monitoring in harsh environments.

Role: Professor at the Applied Mathematics department in Renewable Energy Engineering degree.

Previous occupations/positions

➤ Senior Researcher

O Porriño, Spain, from June 2014 to September 2018.

Research lines: Structural health monitoring, Instrumentation, Nondestructive testing, Optical fiber sensors, Monitoring in harsh environments.

Role: R&D project coordination and management in Fiber optic sensors and harsh environment structural health monitoring and sensing technology. This also includes funding proposal, grant reporting and auditing in regional, national and European level.

➤ Fulbright scholarship holder at University of Illinois at Chicago

Chicago, Illinois, USA, from August 2012 to May 2014

Research lines: Structural health monitoring, Instrumentation, Civil Engineering. Check video: https://www.youtube.com/watch?v=ZP7l1YoCp_E

Role: Research on structural health monitoring applications for cable stayed bridges.

➤ Researcher at Universidad Pública de Navarra

Pamplona, Spain, from July 2009 to July 2012.

Research lines: Fiber optic sensors, Structural health monitoring.

Role: Research toward PhD on fiber optic sensors for structural health monitoring.

➤ Fellow researcher at Universidad Pública de Navarra

Pamplona, Spain, from November 2007 to June 2009.

Research lines: Fiber optic sensors, Structural health monitoring.

Role: Research on fiber optic sensor for wind blade structural health monitoring.

Education

➤ **PhD. in Telecommunication Technologies**

Date of graduation: June 2014

Grade: Cum Laude with International mention.

Title of the thesis: "Contribution to the development of distributed fiber optic sensors based on Stimulated Brillouin Scattering"

University: Universidad Pública de Navarra

➤ **Master in Civil Engineering**

Date of graduation: May 2014

Title of the final thesis: "Investigation into improving resolution of strain measurements in BOTDA sensors".

University: University of Illinois at Chicago

➤ **Master in Communication Engineering**

Date of graduation: June 2009

Title of the final thesis: "Sensores distribuidos basados en el efecto de dispersión de Brillouin Estimulado en fibra óptica"(Distributed sensors based on Stimulated Brillouin Scattering in fiber optics)

University: Universidad Pública de Navarra

➤ **Telecommunication Engineering**

Date of graduation: September 2008

University: Universidad Pública de Navarra

Participation in R&D projects

1. **NewSOL-** New StOrage Latent and sensible concept for high efficient CSP Plants (<http://www.newsol.uevora.pt>). **Financial institution:** H2020 (NMBP). **Duration:** 48 months. **Number of researchers:** 60. **Funding:** 4.900.000,00€. **Role:** Contact participant and researcher.
2. **UMI Next Bearings Wärtsilä - AIMEN.** **Financial institution:** Xunta de Galicia, Unidad Mixta. **Duration:** 3 years. **Funding:** 2.289.200,00 €. **Role:** researcher and WP leader

3. **UMI Joints 4.0 GKN driveline - AIMEN. Financial institution:** Xunta de Galicia, Unidad Mixta. **Duration:** 3 years. **Funding:** 2.786.429,00€. **Role:** researcher and WP leader
4. **LT1 ITC-2013305 GKN driveline - AIMEN. Financial institution:** Xunta de Galicia, Programa FEDER ININTERCONECTA. **Duration:** 2 years. **Funding:** 2.293.335,00 €. **Role:** researcher
5. **UMI NEWFOAM Grupo Empresarial COPO - AIMEN. Financial institution:** Xunta de Galicia, Unidad Mixta. **Duration:** 3 years. **Funding:** 1.500.000,00 €. **Role:** researcher and WP leader.
6. **Structures for fiber optic sensors II (TEC2007-67987-C02-02). Financial institution:** Spanish department of education and science **Duration:** 3 years. **Funding:** 327.547,00€. **Responsible researcher:** Manuel López-Amo Sainz. **Number of researchers:** 12. **Role:** researcher
7. **Structures for fiber optic sensors III (TEC2010-20224-C02-01). Financial institution:** Spanish department of education and science. **Duration:** 4 years. **Funding:** 266.000,00€. **Responsible researcher:** Manuel López-Amo Sainz. **Number of researchers:** 12. **Role:** researcher
8. **Distributed measurement of the strain in wind turbine blades using stimulated Brillouin scattering in fiber optics. Financial institution:** Government of Navarre. **Duration:** 2 years. **Funding:** 26.604,22€. **Responsible researcher:** Alayn Loayssa Lara. **Number of researchers:** 6. **Role:** researcher.

Publications and contributions

➤ Peer reviewed Journal Papers

1. T. Grandal, **A. Zornoza**, A. Lopez, S. Fraga, T. Sun and K. T. V. Grattan, "Analysis of fiber optic sensor embedded in metals by automatic and manual TIG welding," in IEEE Sensors Journal, 14 May 2019 (Early access). doi: [10.1109/JSEN.2019.2916639](https://doi.org/10.1109/JSEN.2019.2916639)
2. T. Grandal, **A. Zornoza**, S. Fraga, G. Castro, T. Sun and K. T. V. Grattan, "Laser Cladding-Based Metallic Embedding Technique for Fiber Optic Sensors," in Journal of Lightwave Technology, vol. 36, no. 4, pages 1018-1025, 15, 2018. doi: [10.1109/JLT.2017.2748962](https://doi.org/10.1109/JLT.2017.2748962)
3. Torres, B., Payá-Zaforteza, I., Barrera, D., Alvarado, Y.A., Calderón, P. A., Loayssa, A., Sagües, M., **Zornoza, A.**, Sales, S. (2015). Monitorización de deformaciones y temperaturas en la estructura de un túnel artificial de alta velocidad mediante sensores ópticos puntuales, de longitud y distribuidos. Informes de la Construcción, 67-538: e071. doi: <http://dx.doi.org/10.3989/ic.13.081>
4. Mikel Bravo, Angel Ullan, **Ander Zornoza**, Alayn Loayssa, Manuel Lopez-Amo and Jose Miguel Lopez-Higuera. Application of Remote Power-by-Light Switching in a Simplified BOTDA Sensor. Sensors 2013, 13 (12), 17434-17444; 17 December 2013. doi: [10.3390/s131217434](https://doi.org/10.3390/s131217434)

5. Javier Urricelqui, **Ander Zornoza**, Mikel Sagues, and Alayn Loayssa. Dynamic BOTDA measurements based on Brillouin phase-shift and RF demodulation. *Optics Express*, Volume: 20 (24), pages 26942 to 26949, November 2012. <http://dx.doi.org/10.1364/OE.20.026942>
6. **Zornoza, A.**, Pérez-Herrera, R.A., Elosúa, C., Diaz, S., Barriain, C., Loayssa, A., Lopez-Amo, M. Long-range hybrid network with point and distributed Brillouin sensors using Raman amplification, *Optics express*, Volume: 18 (9), pages 9531 to 9541, 22-04-2010. <http://dx.doi.org/10.1364/OE.18.009531>
7. **Zornoza, A.**, Olier, D., Sagues, M., Loayssa, A. Brillouin distributed sensor using RF shaping of pump pulses, *Measurement Science and Technology*, Volume 21(9), papernumber 094021, September 2010. <http://dx.doi.org/10.1088/0957-0233/21/9/094021>
8. **Zornoza, A.**, Olier, D., Sagues, M., Loayssa, A. Brillouin spectral scanning using the wavelength dependence of the frequency shift, *IEEE Sensors Journal*, Volume 11 (2), pages 382 to 383, February 2011. <http://dx.doi.org/10.1109/JSEN.2010.2071378>
9. **Zornoza, A.**, Minardo, A., Bernini, R., Loayssa, A., Zeni, L. Pulsing the probe wave to reduce nonlocal effects in brillouin optical time-domain analysis (BOTDA) sensors, *IEEE Sensors Journal*, Volume 11 (4), pages 1067 to 1068 ,April 2011. <http://dx.doi.org/10.1109/JSEN.2010.2078805>
10. Fernandez-Vallejo, M.; Olier, D.; **Zornoza, A.**; Perez-Herrera, R. A.; Diaz, S.; Elosua, C.; Barriain, C.; Loayssa, A.; Lopez-Amo, M. 46-km-Long Raman Amplified Hybrid Double-Bus Network With Point and Distributed Brillouin Sensors. *IEEE Sensors Journal*, Volume: 12 (1), pages 184 to 188, January 2012. <http://dx.doi.org/10.1109/JSEN.2011.2131128>
11. **Zornoza ,A.**; Sagues, M.; Loayssa, A. Self-Heterodyne Detection for SNR Improvement and Distributed Phase-Shift Measurements in BOTDA. *Journal of Lightwave technology*, Volume: 30 (8), pages 1066 to 1072, April 2012. <http://dx.doi.org/10.1109/JLT.2011.2168808>

➤ Congress proceedings

1. T. Grandal, S. Fraga, **A. Zornoza**, "Technique for embedding fiber optics in metallic structures for smart material applications", European workshop on structural health monitoring (EWSHM), Bilbao, Spain, 2016.
2. **A. Zornoza**, T. Grandal, and S. Fraga, "Solar molten salt temperature monitoring with fiber optic sensors," in *Advanced Photonics 2016 (IPR, NOMA, Sensors, Networks, SPPCom, SOF)*, OSA Technical Digest (online) (Optical Society of America, 2016), paper SeM4D.5.
3. **Ander Zornoza**, David Olier, Mikel Sagües and Alayn Loayssa. Distortion-free Brillouin distributed sensor using RF shaping of pump pulses, International conference on Optical fibre sensors 2009 (OFS 20), proceedings of SPIE vol. 7503, 75036D. Edinburgh (UK), October 5th-9th 2009 <http://dx.doi.org/10.1117/12.835463>

4. **Ander Zornoza**, David Olier, Silvia Díaz and Alayn Loayssa. Simplified Brillouin distributed sensing scheme using ultra-high extinction ratio RF pulses. IEEE sensors conference 2009. Proceedings of IEEE sensors conference 2009, paper number 5614. Christchurch (New Zealand), October 25th-28th 2009. <http://dx.doi.org/10.1109/ICSENS.2009.5398262>
5. **Ander Zornoza** and Alayn Loayssa. Low-cost Brillouin optical time domain analysis (BOTDA) distributed sensor setup. European workshop in fibre sensors 2010 (EWOFS). Proceedings of SPIE - The International Society for Optical Engineering 7653, art. no. 765334. Porto (Portugal). September 08th-10th 2010. <http://dx.doi.org/10.1117/12.866351>
6. Fernandez-Vallejo, M., Olier, D., **Zornoza, A.**, Perez-Herrera, R.A., Díaz, S., Elosúa, C., Barriain, C., Loayssa A. and Lopez-Amo, M. Long-range hybrid double-bus network with point and distributed Brillouin sensors using Raman amplification. European workshop in fibre sensors 2010 (EWOFS). Proceedings of SPIE - The International Society for Optical Engineering 7653, art. no. 76533R. Porto (Portugal). September 08th-10th 2010. <http://dx.doi.org/10.1117/12.866453>
7. **Ander Zornoza**, David Olier and AlaynLoayssa. Self-heterodyne synchronous detection for SNR improvement and distributed Brillouin phase shift measurements in BOTDA sensors. Optical fiber sensors 21. Proceedings of SPIE - The International Society for Optical Engineering 7753, art. no. 77532F. Ottawa (Canada). May 15th-19th 2011. <http://dx.doi.org/10.1117/12.886040>
8. Ullán ; M. Bravo ; **A. Zornoza** ; A. Loayssa ; M. Lopez-Amo ; J. M. Lopez-Higuera. BOTDA sensor network with power by light remote switching. Optical fiber sensors 22.Proceedings of SPIE -The International society for Optical Engineering 8421, art.no. 84218E. Beijing (China). October 14th 2012. <http://dx.doi.org/10.1117/12.970559>
9. Javier Urricelqui ;**Ander Zornoza** ; Mikel Sagues ; AlaynLoayssa. Dynamic BOTDA measurements using Brillouin phase-shift. Proceedings of SPIE - The International Society for Optical Engineering 8421, art. no. 8842125. Beijing (China). October 14th 2012. <http://dx.doi.org/10.1117/12.975011>

➤ **Book chapters**

1. Krzysztof Iniewski, *Smart Sensors for Industrial Applications*. May 29, 2013 by CRC Press. Part I Chapter 6: *Recent Advances in Distributed Fiber-Optic Sensors Based on the Brillouin Scattering Effect*, Alayn Loayssa, Mikel Sagues, and **Ander Zornoza**. <http://www.crcpress.com/product/isbn/9781466568105>

➤ **Patents**

1. **Ander Zornoza**, Alayn Loayssa and Mikel Sagues. *Dispositivo y procedimiento para la medida de la distribución de magnitudes físicas en una fibra óptica*. Number of application:

P201130773. Priority country: Spain. Priority date: 13th of May 2011. Institution: Universidad Pública de Navarra. Extended worldwide and exploited.

➤ Committees and actions

1. Management committee substitute for Spain at COST action TU1402 “Quantifying the value of Structural Health monitoring” 2014-2019.

Grants/ Scholarships received

1. **Torres Quevedo** grant for young researcher funded by CDTI. From January 2015 to January 2016.
2. Mobility grant for a research stay at INL funded by the Xunta de Galicia. From September 2015 to December 2015.
3. **FULBRIGHT** scholarship to cover graduate studies and research in the USA funded by the department of state of USA. From August 2012 to May 2014.
4. Predoctoral scholarship funded by the Universidad Pública de Navarra. From July 2009 to July 2012.
5. Mobility grant for short-term scientific missions funded by the COST action (European project). From August 2011 to October 2011.
6. Mobility grant for a research stay at Porto, Portugal, funded by the Universidad Pública de Navarra. From July 2011 to October 2011.
7. Mobility grant for a research stay in Naples, Italy, funded by the Spanish department of science and innovation. From April 2010 to July 2010.
8. Scholarship for the formation of technologists funded by the Government of Navarra. From November 2007 to November 2009.
9. ERASMUS mobility grant for a stay in the “Politecnico di Torino” in Turin (Italy) studying the fifth year of Telecommunication engineering funded by the European Union. From September 2006 to July 2007.

Research stays

1. **Institution:** Seconda Università degli studi di Napoli. **City:** Aversa. **Country:** Italy. **Duration:** April 2010 - July 2010. **Objective:** research in distributed fiber sensors.
2. **Institution:** INESC Porto. **City:** Porto. **Country:** Portugal. **Duration:** July 2011 - October 2011. **Objective:** research in distributed fiber sensors.
3. **Institution:** INL (International Iberian Nanotechnology Laboratory). **City:** Braga. **Country:** Portugal. **Duration:** September 2015 - December 2015. **Objective:** research in chemical sensors.

Languages

- **Spanish:** Native or bilingual proficiency
- **Basque:** Native or bilingual proficiency (C1 certification)
- **English:** Native or bilingual proficiency (C1 certification from 2011, before working at USA for 2 years).
- **Italian:** limited working proficiency