

González Infantes Wilfredo

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EDUCATION

- **PhD. in Physics** (04/2015)
University of Granada, Spain - Department of Atomic, Molecular and Nuclear Physics
Dissertation Title: "*Virtual source model for Monte Carlo calculations in external radiotherapy with photon beam*"
URI: <http://hdl.handle.net/10481/40211>
Supervisor: Lallena Antonio M.
- **M.Sc. in Physics** (07/2008)
University of Granada, Spain - Department of Atomic, Molecular and Nuclear Physics
Dissertation Title: "*Monte Carlo simulation of narrow photon beams*".
Supervisor: Lallena Antonio M.
- **Diploma in Radiation Physics** (07/2005)
Higher Institute of Medical Sciences, Cuba
Supervisor: Alfonso Rodolfo
- **Diploma in Management** (04/2004)
University of Las Tunas, Faculty of Medical Science, Cuba
Supervisor: Hernández Jenny
- **B.S. in Physics** (07/1997)
University of Oriente, Cuba
Supervisor: Bergues Luis

EMPLOYMENT

- **Teaching assistant**
Department of Applied Physics.
University of Malaga. Spain. (03/2018 - present)
- **Research assistant**
Proton Therapy Center Orsay
Institut Curie. France (01/2018 – 02/2018)

IMNC, CNRS
Paris Sub University, France. (09/2015 - 12/2017)

Department of Atomic, Molecular and Nuclear Physics
University of Granada, Spain. (04/2010 - 08/2015)

University of Zaragoza, Spain
Técnicas Radiofísicas, Advanced Core. SL. (12/2009 - 03/2010)
- **Teaching assistant**
Department of Physics and Mathematic
University of Las Tunas, Cuba. (02/2006 - 02/2007)

Department of Medical Physics and Computer Science
University of Las Tunas, Faculty of Medical Science, Cuba. (02/2003 - 08/2005)
- **Medical physics specialist**
Department of Radiotherapy and Nuclear Medicine
General Hospital Dr. Ernesto Guevara de la Serna, Cuba. (12/2000 - 02/2006)
- **Medical physics resident**
Department of Radiotherapy and Nuclear Medicine
General Hospital Dr. Ernesto Guevara de la Serna, Cuba. (09/1997 - 12/2000)

PUBLICATIONS

Books

- **González W.** *Virtual source model for Monte Carlo calculations in external radiotherapy with photon beams.* (2015). ISBN: 978-84-9125-112-5. <http://hdl.handle.net/10481/40211> (Download by: 1010)

Full papers

1. **González W**, Dos Santos M, Guardiola C, Delorme R, Lamirault C, Juchaux M, Le Dudal M, Jouvion G and Prezado Y. *Minibeam radiation therapy at a conventional irradiator: Dose-calculation engine and first tumor-bearing animal's irradiation.* Phys. Med. **69** (2020) 256-261 (Q2 (57/129) T2) (IF: 2.532) <https://doi.org/10.1016/j.ejmp.2019.12.016>
2. Prezado Y, Jouvion G, Guardiola C, **González W**, Juchaux M, Bergs J, Nauraye C, Labiod D, Jourdain L, De Marzi L, Pouzoulet F, Patriarca A and Dendale R. *Proton minibeam radiation therapy leads to a superior tumor control than standard proton therapy in RG2 glioma-bearing rats.* International Journal of Radiation Oncology, Biology, Physics. **104**, **2** (2019) 266-271 <https://doi.org/10.1016/j.ijrobp.2019.01.080> (D1 (11/128)) (IF: 5.554)
3. Prezado Y, Jouvion G, Patriarca A, Nauraye C, Guardiola C, Juchaux M, Lamirault C, Labiod D, Jourdain L, Sebric C, Dendale D, **González W** and Pouzoulet F. *Proton minibeam radiation therapy widens the therapeutic index for high-grade gliomas.* Sci. Rep. **8** (2018) 16479. <https://doi.org/10.1038/s41598-018-34796-8> (Q1 (12/64)) (IF: 4.122)
4. **González W** and Prezado Y. *Spatial fractionation of the dose in heavy ions therapy: an optimization study.* Med. Phys. **45**(6) (2018) 2620-2627. <https://doi.org/10.1002/mp.12902> (Q1 (83/2061)) (IF: 2.884)
5. Prezado Y and dos Santos M, **González W**, Jouvion G, Guardiola C, Heinrich S, Labiod D, Juchaux M, Jourdain L, Sebric C, Pouzoulet F. *Transfer of Minibeam Radiation Therapy into a cost-effective equipment for radiobiological studies: a proof of concept.* Sci. Rep. **7** (2017) 17295. <https://doi.org/10.1038/s41598-017-17543-3> (Q1 (12/64)) (IF: 4.122)
6. Prezado Y, Jouvion G, Patriarca A, Nauraye C, Bergs J, **González W**, Guardiola C, Juchaux M, Labiod D, Jourdain L, Sebric C and Pouzoulet F. *Proton minibeam radiation therapy spares normal rat brain: Long-Term Clinical, Radiological and Histopathological Analysis.* Sci. Rep. **7** (2017) 14403. <https://doi.org/10.1038/s41598-017-14786-y>. (Q1 (12/64)) (IF: 4.122)
7. **González W**, Anguiano M and Lallena A. M. *Performance of a virtual source model for stereotactic radiosurgery with a dynamic micro-multileaf collimator.* Biomed. Phys. Eng. Express. (2017) **3** 065008 (SJR Q3). <https://doi.org/10.1088/2057-1976/aa84ca>
8. Martínez-Rovira I, **González W**, Brons S and Prezado Y. *Carbon and oxygen minibeam radiation therapy: experimental dosimetric evaluation.* Med. Phys. **44**(8) (2017) 4223-4229. <https://doi.org/10.1002/mp.12383> (Q1 (83/2061)) (IF: 2.884) (Cited by: 2)
9. **González W**, Peucelle C and Prezado Y. *Theoretical dosimetric evaluation of carbon and oxygen minibeam radiation therapy.* Med. Phys. **44**(5) (2017) 1921-1929. <https://doi.org/10.1002/mp.12175> . (Q1 (83/2061)) (IF: 2.884) (Cited by: 2)
10. **González W**, García I B, Anguiano M, Lallena A M. *A general photon source model for clinical linac heads in photon mode.* Rad. Phys. Chem. **117** (2015) 140-152. <https://dx.doi.org/10.1016/j.radphyschem.2015.08.006> (Q1 (8/33)) (IF: 1.435) (Cited by: 5).
11. **González W**, Anguiano M and Lallena A. M. *A source model for the electron contamination of clinical linac heads in photon mode.* Biomed. Phys. Eng. Express **1** (2015) 025202 (SJR Q3). <https://doi.org/10.1088/2057-1976/1/2/025202> (Cited by: 2). (Download: 200)
12. **González W**, Lallena A M and Alfonso R. *Monte Carlo simulation of the dynamic micro-multileaf collimator of a LINAC Elekta Precise using PENELOPE.* Phys. Med. Biol. **56** (2011) 3417–3431. <https://doi.org/10.1088/0031-9155/56/11/015> . (Q1 (14/72)) (IF: 2.829) (Cited by: 6). (Download by: 425).
13. **González W**, Lallena A M and Alfonso R. *Monte Carlo simulation of a micro-multileaf collimator.* V Latin American Congress on Biomedical Engineering, Havana, Cuba. (2011). 1252-1255 ISBN: 978-3-642-21197-3 https://doi.org/10.1007/978-3-642-21198-0_318
14. Guerra P, **González W**, Ledesma-Carbayo M J, Cal-González J, Herranz E, Udias J M, Lallena A, Santos A. *Monte Carlo Based Dose Estimation in Intraoperative Radiotherapy.* Nuclear Science Symposium, Medical

Imaging Conference. Knoxville, Tennessee, (2010). ISBN: 9781424491049 3069-3072
http://www2.die.upm.es/im/papers/MIC2010_Guerra.pdf

15. **González W**, Lallena A M and Alfonso R. *Monte Carlo Study of Elekta SL linac for Stereotactic Radiosurgery*. Revista Cubana de Física. **26** -2A (2009) (SJR Q4).
http://www.revistacubanadefisica.org/index.php/rcf/article/view/RCF_26-2A_150_2009
16. Leyva-Cruz J A and **González W**. *Biophysical mechanisms of interaction between electromagnetic fields and bone tissue during healing process*. II Latin American Congress on Biomedical Engineering, Havana, Cuba. (2001) ISBN: 959-7132-57-5

Abstracts

1. Prezado Y, **González W**, Patriarca A, Jouvion G, Nauraye C, Guardiola C, Labiod D, Juchaux M, Jourdain L, Sebie C and Pouzoulet F. *Proton minibeam radiation therapy: A promising alternative for high-grade gliomas*. European Congress of Medical Physics. Copenhagen, Denmark. 08/2018. Phys. Med. **52** (2018) 22. <https://doi.org/10.1016/j.ejmp.2018.06.124> (Q2 (57/129)) (IF: 2.24) 1120-1797
2. Prezado Y and dos Santos M, **González W**, Jouvion G, Guardiola C, Heinrich S, Labiod D, Juchaux M, Jourdain L, Sebie C, Pouzoulet F. *Transfer of minibeam radiation therapy into a cost-effective equipment: A proof of concept*. European Congress of Medical Physics. Copenhagen, Denmark. 08/2018. Phys. Med. **52** (2018) 71-72. <https://doi.org/10.1016/j.ejmp.2018.06.259> (Q2 (57/129)) (IF: 2.24)
3. **González W**, Guardiola C, Peucelle C, Martínez-Rovira I and Prezado Y. *Spatial fractionation of the dose in charged therapy: Dosimetry evaluations*. European Congress of Medical Physics. Copenhagen, Denmark. 08/2018. Phys Med. **52** (2018) 136. <https://doi.org/10.1016/j.ejmp.2018.06.438> (Q2 (57/129)) (IF: 2.24)
4. Martínez-Rovira I, **González W**, Brons S and Prezado Y. *Hadron minibeam radiation therapy (MBRT): first experimental proof of concept*. World Congress on Medical Physics and Biomedical Engineering. Prague, Czech Republic. 06/2018. ISBN: 978-981-10-9023-3. 1034. <https://www.springer.com/us/book/9789811090370>
5. Prezado Y and dos Santos M, **González W**, Jouvion G, Guardiola C, Heinrich S, Labiod D, Juchaux M, Jourdain L, Sebie C, Pouzoulet F. *Transfer of minibeam radiation therapy into a small animal irradiator*. World Congress on Medical Physics and Biomedical Engineering. Prague, Czech Republic. 06/2018. ISBN: 978-981-10-9023-3. 1057-1058. <https://www.springer.com/us/book/9789811090370>
6. Prezado Y, **González W**, Patriarca A, Jouvion G, Nauraye C, Guardiola C, Labiod D, Juchaux M, Jourdain L, Sebie C and Pouzoulet F. *Glioma tumor control effectiveness after proton minibeam radiation therapy*. World Congress on Medical Physics and Biomedical Engineering. Prague, Czech Republic. 06/2018. ISBN: 978-981-10-9023-3. 1048-1049. <https://www.springer.com/us/book/9789811090370>
7. **González W**, Martínez-Rovira I, Peucelle C and Prezado Y. *Charged particles minibeam radiation therapy*. World Congress on Medical Physics and Biomedical Engineering. Prague, Czech Republic. 06/2018. ISBN: 978-981-10-9023-3. 892. <https://www.springer.com/us/book/9789811090370>
8. **González W**, Prezado Y, Patriarca A, Jouvion G, Nauraye C, Guardiola C, Labiod D, Juchaux M, Jourdain L, Sebie C and Pouzoulet F. *Proton minibeam radiation therapy widens the therapeutic window for gliomas*. International Journal of Particle Therapy **5**(2) (2018) 58 <https://doi.org/10.14338/2331-5180-5-2-000> 2331-5180
9. Prezado Y, **González W**, Patriarca A, Jouvion G, Nauraye C, Guardiola C, Labiod D, Juchaux M, Jourdain L, Sebie C and Pouzoulet F. *Proton minibeam radiation therapy widens the therapeutic window for gliomas*. Radiotherapy and Oncology. **127**(1) (2018) S299-S300 [https://doi.org/10.1016/S0167-8140\(18\)30879-X](https://doi.org/10.1016/S0167-8140(18)30879-X) (Q1 (15/129)) (IF: 4.942) 0167-8140
10. Prezado Y and dos Santos M, **González W**, Jouvion G, Guardiola C, Heinrich S, Labiod D, Juchaux M, Jourdain L, Sebie C, Pouzoulet F. *Minibeam radiation therapy in a commercial irradiator spares normal rat brain*. Radiotherapy and Oncology. **127**(1) (2018) S298-S299 [https://doi.org/10.1016/S0167-8140\(18\)30877-6](https://doi.org/10.1016/S0167-8140(18)30877-6) (Q1 (15/129)) (IF: 4.942) 0167-8140
11. **González W**, Guardiola C, Peucelle C, Martínez-Rovira I and Prezado Y. *Charged particles grid and minibeam radiation therapy: Monte Carlo dosimetry evaluations*. International Conference on Monte Carlo Techniques for Medical Applications. Phys. Med. **42** (2017) 16 <https://doi.org/10.1016/j.ejmp.2017.09.040> (Q2 (57/129)) (IF: 2.24)
12. **González W**, Lallena A M and Anguiano M. *Virtual source model for stereotactic radiosurgery with a dynamic micro-multileaf collimator*. International Conference on Monte Carlo Techniques for Medical Applications. Phys. Med. **42** (2017) 16 <https://doi.org/10.1016/j.ejmp.2017.09.039> (Q2 (57/129)) (IF: 2.24)

13. Prezado Y, Jouvion G, Patriarca A, Nauraye C, Heinrich S, Bergs J, Labiod D, Jourdain L, **González W**, Juchaux M, Sebric C y Pouzoulet. *Proton minibeam radiation therapy spares normal brain rats*. 56 Annual conference of particle therapy co-operative group. International Journal of Particle Therapy **4**(1) (2017) 14-83 <https://doi.org/10.14338/IJPT.17-PTCOG-1.1>
14. Prezado Y, Jouvion G, Patriarca A, Nauraye C, Bergs J, Jourdain L, **González W**, Juchaux M, Sebric C and Pouzoulet F. *Proton minibeam radiation therapy spares normal rat brain*. Radiotherapy and Oncology. **123**(1) (2017) S123-S124 [https://doi.org/10.1016/S0167-8140\(17\)30689-8](https://doi.org/10.1016/S0167-8140(17)30689-8)(Q1 (15/129)) (IF: 4.942) 0167-8140
15. **González W**, Peucelle C and Prezado Y. *Carbon and oxygen minibeam radiation therapy: a Monte Carlo dosimetry study*. Phys. Med. **32** (2016) 196–221 <https://doi.org/10.1016/j.ejmp.2016.07.685> (Q2 (57/129)) (IF: 2.24)
16. **González W**, Peucelle C and Prezado Y. *Optimization of minimal beam size for spatial fractionation of the dose using ions*. Phys. Med. **32** (2016) 251-273 <https://doi.org/10.1016/j.ejmp.2016.07.571> (Q2 (57/129)) (IF: 2.24)
17. Prezado Y, **González W**, Heinrich S, Labiod D, Juchaux M, Martínez-Rovira I, Nauraye C, Patriarca A, Peucelle C and Sebric C. *Proton Minibeam Radiation Therapy Increases Normal Tissue Resistance*. Med. Phys. **43** (6) (2016) 3675-3676 <https://doi.org/10.1118/1.4957089> (Cited by: 1) (Q1 (83/2061)) (IF: 2.884) 2473-4209
18. Martínez-Rovira I, **González W**, Brons S and Prezado Y. *Hadron minibeam radiotherapy: viability study at the HIT (Heidelberg Ion-Beam Therapy Center)*. 5th Joint Congress SEFM-SEPR. Girona, Spain, (2017). ISBN: 978-84-697-4064-4. 150-151 <https://sefm.es/wp-content/uploads/2017/07/BASE-LLIBRE-ABSTRACTS-REDUCIDO-210617.pdf>
19. **González W**, Lallena A M and Anguiano M. *A general source model for clinical linac heads in photon model*. World Congress on Medical Physics & Biomedical Engineering. Toronto, Canada, (2015). ISBN: 978-3-319-19387-8 <https://www.springer.com/kr/book/9783319193861>
20. Leyva-Cruz J A, Uchôa M M C, Dolci D S, Ferreira E S, Pinto G O and **González W**. *Radiotherapy Planning using CEER and CADPlan in a Prostate Cancer Patient*. World Congress on Medical Physics & Biomedical Engineering. Toronto, Canada, (2015). ISBN: 978-3-319-19387-8 <https://www.springer.com/kr/book/9783319193861>
21. **González W**, Lallena A M and Anguiano M. *Model electron contamination sources for photon beams radiotherapy*. 3rd Joint Congress SEFM-SEPR. Cáceres, Spain. (2013). <https://sefm.es/wp-content/uploads/2017/06/Libro-comunicaciones-Congreso-2013-SEFM-SEPR-.pdf>
22. Gómez M, **González W**, Lallena A M and Anguiano M. *Characterization of the primary electron source of clinical linac*. 3rd Joint Congress SEFM-SEPR. Cáceres, Spain. (2013).. <https://sefm.es/wp-content/uploads/2017/06/Libro-comunicaciones-Congreso-2013-SEFM-SEPR-.pdf>
23. **González W**, Lallena A M, García I B and Anguiano M. *Source Model for clinical linac in photon mode*. XXXIII Biennial Meeting of the Spanish Royal Society of Physics. Santander, Spain. 07/2011. ISBN: 978-84-86116-40-8. 172 https://rsef.es/images/Fisica/XXXIII_RBF_IV.pdf
24. **González W**, Lallena A M. *Characterization of the photon sources of clinical linac*. XVIII Congress of Medical Physics Spanish Society, Sevilla, Spain. (2011). Supl 12. 2011. ISBN: 978-84-695-3295-9 365 <https://sefm.es/wp-content/uploads/2017/05/pscongreso2011.pdf>

PRESENTATIONS

1. **González W**, dos Santos M, Guardiola C, Delorme R, Lamirault C, Juchaux M, Le Dudal M, Jouvion G and Prezado Y. *Dosimetry to guide the preclinical studies in Minibeam radiation therapy: tools and an in vivo proof of concept*. 2nd International Conference on Monte Carlo Techniques for Medical Application (MCMA). Montréal, Canada. 20/06/2019
2. Martínez-Rovira I, **González W**, Brons S and Prezado Y. *Hadron minibeam radiation therapy: feasibility study at the heidelberg ion-beam therapy center (HIT)*. Radiat. Prot. Dosim. Neutron and ion dosimetry symposium. Kraków, Poland. 05/2017
3. **González W**. *A model of virtual sources in stereotactic radiosurgery*. Nuclear Physics Meetings. La Rábida, Spain. 09/2012
4. **González W**. *Fluence and energy spectra for photon beams: A Monte Carlo study*. Third European Workshop on Monte Carlo Treatment Planning. Sevilla, Spain. 05/2012

5. Mayorga P, Lallena A M, **González W** and Castellano E. *Determination by Monte Carlo of Output Factor for Typical Segments in IMRT*. V Latin American Congress of Medical Physics. Cusco, Peru. 05/2010
6. **González W** and Lallena A M. *Monte Carlo simulation in stereotactic radiosurgery*. 1st Joint Congress SEFM-SEPR. Alicante, Spain. 06/2009
7. **González W**. *Monte Carlo simulation of Elekta linac used in radiosurgery*. 3rd ALBAN Conference. Porto, Portugal. 06/2009
8. **González W**. *Monte Carlo simulation of narrow photon beams*. 2nd ALBAN Conference. Grenoble, France. 05/2007
9. **González W**. *Radioactive isotopes in medicine: Current Trends*. I International Congress on Nuclear Oncology. Havana, Cuba. 06/2005
10. **González W** and Fornaris R. *Radiographic method for dynamic cardiovascular studies*. International Workshop of Nuclear Medicine. Havana, Cuba. 12/2000
11. **González W**, Sánchez L and Fornaris R. *Scintigraphy scan*. XVIII Scientific Meeting General Hospital Dr. Ernesto Guevara de la Serna. Cuba. 11/1999
12. Bergues L, Pérez R, Hinojosa R, Leyva J A, **González W**, Tamayo V, Ropero R, Suárez C, Camué H, Mesa J, Montes de Oca L and Fong A. *Study "in vivo" of the static magnetic field effects in Ehrlich ascitic tumor*. I Latin American Congress on Biomedical Engineering. Mazatlán, Mexico. 08/1998
13. Bergues L, Pérez R, Hinojosa R, Leyva J A, **González W**, Suárez C, Camué H, Ropero R and Fong A. *Static Magnetic Fields effect on health*. 17th International Cancer Congress. Rio de Janeiro, Brazil. 07/1998

PARTICIPATION IN PROJECTS

Main researcher

1. *Monte Carlo simulation of narrow photon beams*. University of Granada, Spain. (2007-2009)
2. *Electromagnetism as an alternative therapeutic method in pseudo arthrosis and osseous fractures*. General Hospital Dr. Ernesto Guevara de la Serna, Cuba. (2000-2004).

Researcher

1. *Proton physical dosimetry*. University of Granada, Spain. (2020-2023)
2. *Physical dosimetry of clinical proton beams*. University of Granada, Spain. (2020-2022)
3. *GDR Mi2b: Implementation proton minibeam radiation therapy*. Paris Sub University, France. (2015-2018)
4. *INSERM-Physics for Cancer: Transfer of minibeam radiation therapy by means of a cost-effective equipment*. Paris Sub University, France. (2015-2018)
5. *Carbon and oxygen minibeam radiation therapy*. Paris Sub University, France. (2015-2018)
6. *Physical dosimetry and nuclear structure*. University of Granada, Spain. (2013-2014)
7. *Intercomparison of dosimetry systems in radiotherapy*. University of Granada, Spain. (2014)
8. *High-Performance Mass Spectrometry Using a Quantum Sensor*. University of Granada, Spain. (2013-2014)
9. *PRECISION: Research on treatment technologies for image guided and simulation for safe practice in radiotherapy*. University of Granada, Spain. (2010-2013)
10. *Monte Carlo simulation of radiation transport: Physics, numerical methods and applications*. University of Granada, Spain. (2010-2012)
11. *Monte Carlo simulation of clinical electron accelerators*. Técnicas Radiofísicas, SL, Spain. (2009-2010)

12. *ENTERPRASE: Research on treatment technologies for image guided and simulation for safe practice in radiotherapy.* University of Granada, Spain. (2009-2010)
13. *Strategy for improvement in clinical trial of human resources.* University of Las Tunas, Cuba. (2005-2007)
14. *Automation of detectors used in Nuclear Medicine.* General Hospital Dr. Ernesto Guevara de la Serna, Cuba. (1998-2002)
15. *Electromagnetic radiation effects in biological systems.* National Center of Applied Electromagnetism, Cuba. (1995-2000)

RESEARCH STAYS

- University of Granada. Spain. (12/2016-03/2017)
- Heidelberg Ion-Beam Therapy Center (HIT). Heidelberg University. Germany. (04/2016)
- Curie Institut-Orsay Proton Therapy Center (ICPO). Paris Sub University. France. (03/2016)
- Institute of Energy Technology. Polytechnic University of Cataluña. España. (11/2014)
- Radiotherapy department. University Hospital of Málaga. España. (07/2014)
- National Accelerator Centre. Sevilla. España. (01/2014)
- GMV Aerospace and Defence. Madrid. España. (11/2012)
- Radiotherapy department. Clinical Hospital Hermanos Ameijeiras. Cuba. (05/2011)

PROFESSIONAL MEMBERSHIPS

- Spanish Society of Medical Physics. (2007 - present)
- Latin American Council of Physics. (2005 - present)
- Cuban Society of Physics. (2001 - present)
- Member of the Expert Group on Health, Las Tunas, Cuba. (2002-2007)
- Project Manager, General Hospital Dr. Ernesto Guevara de la Serna, Cuba. (2002-2006)
- Scientific Council, General Hospital Dr. Ernesto Guevara de la Serna, Cuba. (2001-2006)

TEACHING ASSISTANT POSGRADUATE

- Máster en Física. Nanotecnología: Física y Aplicaciones. Física de Partículas y Astrofísica. Física y Tecnología de las Radiaciones. Universidad de Granada (2019 - present).

COURSES TAUGHT

1. Physics. UNED. Spain. 2021 (64 hours).
2. Mechanics. UNED. Spain. 2020-2021 (20 hours)
3. Application of the radiations. University of Granada. Faculty of Science. Spain. 2019-2021 (36 hours).
4. Physics I. University of Málaga. Faculty of Science. Spain. 2018-2021 (200 hours).
5. Physics II. University of Málaga. Faculty of Science. Spain. 2018-2021 (250 hours).
6. Analytical Mechanics. University of Málaga. Faculty of Science. Spain. 2019-2021 (180 hours).
7. Radiochemistry. University of Málaga. Faculty of Science. Spain. 2019-2021 (75 hours).
8. Monte Carlo in Medical Physics. UPTC. Faculty of Science. Colombia. 2018 (24 hours).
9. Linear Algebra. University of Las Tunas, Cuba. 2006 (70 hours).
10. Radiation Physics. University of Las Tunas, Faculty of Medical Science, Cuba. 2006 (72 hours).
11. Physics I. University of Las Tunas, Faculty of Medical Science, Cuba. 2005 (72 hours).
12. Physics II. University of Las Tunas, Cuba. 2005 (74 hours).

13. Biostatistics. University of Las Tunas, Faculty of Medical Science, Cuba. 2004 (360 hours).
14. Medical informatics II. University of Las Tunas, Faculty of Medical Science, Cuba. 2003 (100 hours).

PRESENTATIONS AS A VISITING PROFESSOR

1. Physics in Cancer Research. Pedagogical and Technological University of Colombia. Faculty Science, Colombia. 2018 (1 hours).
<https://www.facebook.com/universidaduptc/videos/331495477608440/UzpfSTEwMDAwMDAwNDMxMzcxMDoyMTcyMzlyMDEyNzc3OTIx/>
2. External Radiotherapy: State of the Art. Pedagogical and Technological University of Colombia. Faculty Science, Colombia. 2018 (1 hours)
3. Spatial fractionation with minibeam in external radiotherapy. University of Granada, Department of Atomic, Molecular and Nuclear Physics, Spain. 2018 (4 hours)
4. Virtual source model for Monte Carlo calculations in external radiotherapy with photon beams. University Paris Sud, IMNC, CNRS, Paris, France. 2015 (1 hour)
5. Biostatistics for Clinical Trials. University of Las Tunas, Faculty of Medical Science, Cuba. 2004 (4 hours).

ADVISOR

- Irradiation of cell culture boxes: Monte Carlo simulations with PENELOPE. Master's degree in Physics. Cristina A. S. 2017-2018.
- Virtual sources model in protontherapy. Master's degree in Nuclear Physics. Cuesta Reina, J. A. 2019-2020