MINISTERIO DE CIENCIA E INNOVACIÓN

CURRICULUM VITAE (maximum 4 pages)

AGENCIA ESTATAL DE INVESTIGACIÓN

CV date	18/01/2021

Part A. PERSONAL INFORMATION

First and Family name	Pablo de Vera Gomis		
ID number	48567612-F	Age	34
Researcher codes	WoS Researcher ID	L-6674-2014	
	Open Researcher and Contributor ID (ORCID)	0000-0002-5645-412X	

A.1. Current position

Name of Institution	Fondazione Bruno Kessler		
Department	European Centre for Theoretical Studies in Nuclear Physics and Related Areas (ECT*)		
Address and Country	Strada delle Tabarelle, 286, I-38123 Villazzano, Trento, Italy		
Phone number	+34 685356948	E-mail	pdeveragomis@ectstar.eu
Current position	Marie Curie Individual Fellow	From	01/11/2020
Key words	Ion/electron beams, condensed matter, radiotherapy, simulation		

A.2.Education

PhD/MSc/BSc	University	Year
PhD Nanoscience (Physics)	University of Alicante	2016
MSc Nanoscience	University of Alicante	2011
BSc Chemistry	University of Alicante	2009

A.3. JCR articles, h Index, thesis supervised…

Research impact:
Citations: Google Scholar: 458; Publons: 295; Scopus: 352; ResearchGate: 390
h-index: Google Scholar: 13; Publons: 10; Scopus: 10; ResearchGate: 11
Citations/year (2016-2020): Google Scholar: 71; Publons: 44; Scopus: 54; ResearchGate: 61
Google Scholar link: https://scholar.google.com/citations?user=O7jxPYUAAAAJ&hl=es
ResearchGate link: https://www.researchgate.net/profile/Pablo_De_Vera
Number of published articles per journal's quartile: (corresponding to year of publication):
Q1: 12; Q2: 6; Q3: 10; Book chapters: 4
Fellowships awarded:
Marie Curie Individual Fellow (ongoing), Alexander von Humboldt Postdoctoral Fellow, Juan de la Cierva-Formación Postdoctoral Fellow, VALi+d Predoc Fellow (Gen. Valenciana)
Mentoring of students: see section C10 below

Part B. CV SUMMARY *(max. 3500 characters, including spaces)*

Pablo de Vera is an experienced researcher specialised in the theory and computer simulation of the interaction and effects of radiation with condensed matter, for applications which include biophysics, materials science, physical chemistry and nanotechnology. His interdisciplinary training includes a **BSc in Chemistry** (**Alicante**, 2009, **first student of promotion**), a **MSc in Nanoscience and Nanotechnology** (**Alicante**, 2011, **first student of promotion**), a **PhD in Nanoscience/Physics** (**Alicante**, 2016, **Extraordinary Thesis Award** and mention of International Doctor) and an extensive international postdoctoral experience. From October 2014 to March 2017 he participated in the **Marie Curie Initial Training Network ARGENT** (Advanced Radiotherapies, Generated by Exploiting Nanoprocesses and Technologies) at the **Open University** (Milton Keynes, United Kingdom) and **Queen's University** (Belfast, United Kingdom), while collaborating with MBN (MesoBioNano) Research Center (Frankfurt, Germany). During this period his research focused on the study of several physico-chemical phenomena that occur at the nanoscale in biomaterials as a result of ion beam irradiation, as well as sensitisation using nanoparticles for cancer therapy. Later, he made stays at the Centre for Research in Optics and Nanophysics (CIOyN, **University of Murcia**, 2017-2018, within the **Program for Research Groups of Excellence of the Region of Murcia**) and at the **MBN Research Center** (Frankfurt, Germany, 2018-2019), the latter as **Alexander von Humboldt Research Fellow**. Later he returned to the **University of Murcia** as a **Juan de la Cierva-Formación postdoctoral fellow** (Spanish Ministry of Science, 2019-2020). During this time, he mastered the computer simulation of charged particle transport and effects on different

materials through the combined application of Monte Carlo and reactive classical molecular dynamics simulations, for its application to the modelling of radiation-induced chemistry during the use of nanofabrication techniques. From November 2020 he works as a **Marie Curie Individual Fellow** at the **European Center for Theoretical Studies in Nuclear Physics and Related Areas** (ECT*, Trento, Italy) and leads the project *NanoEnHanCeMent* (*Nanoparticle Enhanced Hadron-therapy: a comprehensive Mechanistic description*, see https://www.facebook.com/Dr.Pablo.deVera.Gomis). Being 34 years old, Pablo has published more than 30 works in international scientific journals and book chapters, has given more than 10 invited talks at international conferences and has visited various research centres in Spain, Germany, the United Kingdom, Italy and Denmark, where he has collaborated with both theoretical and experimental researchers.

Part C. RELEVANT MERITS

C.1. Publications (including books)

1. S. Taioli*; E. Trevisanutto; P. de Vera; S. Simonucci; I. Abril; R. Garcia-Molina; M. Dapor*, Relative role of the physical mechanisms on complex biodamage induced by carbon irradiation *J. Phys. Chem. Lett.* **12**, 487 (2021). IF: 6.71, **Q1/D1**.
2. P. de Vera*; M. Azzolini; G. Sushko; I. Abril; R. Garcia-Molina; M. Dapor; I. Solov'yov; A. Solov'yov, Multiscale simulation of the focused electron beam induced deposition process. *Scientific Reports* **10**, 208 (2020). IF: 3.998, **Q1**.
3. P. de Vera*; I. Abril; R. Garcia-Molina, Excitation and ionisation cross-sections in condensed-phase biomaterials by electrons down to very low energy: application to liquid water and genetic building blocks. *Physical Chemistry Chemical Physics* (2021, in press). DOI: 10.1039/d0cp04951d. IF: 3.430, **Q1**
4. P. de Vera*; R. Garcia-Molina, Electron Inelastic Mean Free Paths in Condensed Matter Down to a Few Electronvolts. *J. Phys. Chem. C* **123**, 2075 (2019). IF: 4.309, **Q1**.
5. P. de Vera*; E. Surdutovich; A. V. Solov'yov, The role of shock waves on the biodamage induced by ion beam radiation. *Cancer Nano.* **10**, 5 (2019). IF: 4.700, **Q2**.
6. M. Dapor; I. Abril; P. de Vera; R. Garcia Molina*, Energy deposition around swift proton tracks in polymethylmethacrylate: How much and how far. *Phys. Rev. B* **96**, 064113 (2017). IF: 3.813, **Q2**.
7. M. Wang; B. Rudek; D. Bennett; P. de Vera; M. Bug; T. Buhr; W. Y Baek; G. Hilgers; H. Rabus*, Cross sections for ionization of tetrahydrofuran by protons at energies between 300 and 3000 keV. *Phys. Rev. A* **93**, 052711 (2016). IF: 2.925, **Q1**.
8. P. de Vera*; R. Garcia-Molina; I. Abril, Angular and energy distributions of secondary electrons ejected from arbitrary biomaterials by proton impact. *Phys. Rev. Lett.* **114**, 018101 (2015). IF: 7.645, **Q1/D1**.
9. S. Limandri; P. de Vera; R. C. Fadanelli; L. C. C. M. Nagamine; A. Mello; R. Garcia-Molina; M. Behar; I. Abril*, Energy deposition of H and He ion beams in hydroxyapatite films: A study with implications in ion beam cancer therapy. *Phys. Rev. E* **89**, 022703 (2014). IF: 2.288, **Q1**.
10. P. de Vera*; R. Garcia-Molina; I. Abril; A. Solov'yov, Semiempirical model for the ion impact ionization of complex biological media. *Phys. Rev. Lett.* **110**, 148104 (2013). IF: 7.645, **Q1/D1**.

C.2. Research projects and grants

1. HP10CR8SBA: *Electron production in radioenhancing metals*, CINECA (ISCRA call for computing time, project class C, 2021), **Principal investigator**, **in evaluation**.
2. COST Action *Multiscale irradiation and chemistry driven processes and related technologies* (main proposer: MBN Research Center, Frankfurt, Germany), **Secondary proposer**, **In evaluation**.
3. 840752: *Nanoparticle Enhanced Hadron-therapy: a Comprehensive Mechanistic description*, European Commission (Marie Curie Individual Fellowships), 01/11/2020 - 31/10/2022, 171.473,28 €, IP: P. de Vera (ECT*, Trento, Italy), **Principal Investigator.**
4. *High-Z ceramic oxide nanosystems for mediated proton cancer therapy*, Fondaz. Caritro, 01/10/2019 - 30/09/2021, 50.000 €, IP: M. Dapor (ECT*, Trento, Italy), **Team member.**
5. 096788-B-I00: *Interaction of low energy electrons with nanosystems*, Ministerio de Ciencia e Innovación (Proyectos Generación de Conocimiento), 01/01/2019 - 31/12/2021, 34.848 €, IP: R. Garcia-Molina (Universidad de Murcia), **Team member.**

6. AICO/19/070: *Dose estimation in hadrontherapy*, Conselleria d'Educació, Generalitat Valenciana (Ayudas a grupos consolidables), 01/01/2019 - 31/12/2020, 40.000 €, IP: C. Lacasta-Llacer (Institut de Física Corpuscular, Valencia), **Team member.**
7. 19907/GERM/15: *Numerical simulations of complex interacting systems*, Fundación Séneca (Ayudas a Grupos de Excelencia, Región de Murcia), 01/01/2015 – 30/06/2021, 250.000 €, IPs: M. Ortuño, R. Garcia-Molina (Universidad de Murcia), **Team member.**
8. 1197139: *Response of biomolecular systems under high-LET ion irradiation*, Alexander von Humboldt Foundation (Humboldt Fellowships), 06/08/2018 - 14/09/2019, 10.400 €, IP: P. de Vera (MBN Research Center, Frankfurt, Germany), **Principal Investigator.**
9. FIS2014-58849-P: *Generation, transport and effects of electrons in condensed matter*, Ministerio de Economía (Proyectos de Generación de Conocimiento), 01/01/2015 - 31/12/2018, 36.300 €, IP: R. Garcia-Molina (Universidad de Murcia), **Team member.**
10. FIS2010-17225: *Damage induced in carbon nanotubes and biomaterials by ionic irradiation*, Ministerio de Ciencia (Proyectos de Generación de Conocimiento), 01/01/2011 - 31/12/2014, 30.250 €, IP: I. Abril (Universitat d'Alacant), **Team member.**

C.5. Awards and recognitions

1. Back cover for a forthcoming issue of *Physical Chemistry Chemical Physics*, for the article *Excitation and ionisation cross-sections in condensed-phase biomaterials by electrons down to very low energy: application to liquid water and genetic building blocks* (2021).
2. Highlighted article *Simulation of the energy spectra of swift light ion beams after traversing cylindrical targets: A consistent interpretation of experimental data relevant for hadron therapy* (2018) by the *European Physical Journal D*: https://epjb.epj.org/epjd-news/1802-epjd-highlight-modelling-ion-beam-therapy
3. Journal cover for the article *Molecular dynamics study of accelerated ion-induced shock waves in biological media* (2016) in the *European Physical Journal D*: https://epjd.epj.org/articles/epjd/abs/2016/09/contents/contents.html
4. Highlighted article *Comparative analysis of the secondary electron yield from carbon nanoparticles and pure water medium* (2015) by the *European Physical Journal D*: https://epjd.epj.org/epjd-news/948-epjd-highlight-organic-nanoparticles-more-lethal-to-tumours
5. Seal of Excellence, Marie Curie Individual Fellowships Calls 2016 and 2017, EU.
6. PhD Extraordinary Award (best of every 5 PhD students), University of Alicante, 29/11/2019.
7. MSc Extraorindary Award (first student of promotion), University of Alicante, 22/12/2011.
8. BSc Extraordinary Award (first student of promotion), University of Alicante, 25/11/2009.

C.6. Participation in scientific conferences

- Number of contributions to conferences: 45 international + 4 national (Spain)
- Contribution type: 20 invited talks (10 as speaker) + 18 talks (11 as speaker) + 11 posters

C.7. Seminars imparted at universities and research centres

3x Universidad Murcia, 2x Universidad Alicante, 1x Frankfurt Institute for Advanced Studies, 1x Physikalisch-Technische Bundesanstalt, 1x Queen's University Belfast, 1x University of Southern Denmark, 1x Trento Institute for Fundamental Physics and Applications.

C.8. Organisation of scientific events

1. *9th International Symposium on Atomic and Cluster Colisions*, University of Kent, Canterbury (UK), 31/07/2019 - 03/08/2019.
2. *2nd Annual meeting of the Marie Curie Initial Training Network ARGENT*, Queen's University Belfast (UK), 22/02/2017 - 24/02/2017.
3. *Mathematical Modelling of Radiation in Cancer Therapy*, Queen's University Belfast (UK), 11/01/2017 - 12/01/2017.
4. *Nanoparticles for medicine*, Université Paris Saclay, Orsay (France), 12/12/2014.

C.9. Participation in reviewing tasks and editorial committees

- Reviewer for *Phys. Rev. A*, *Cancer Nano.*, *ACS Omega*, *Nucl. Instrum. Methods B*, *Eur. Phys. J. D*, *Revista Eureka sobre Enseñanza y Divulgación de las Ciencias*.
- Guest editor for the special issue "Atomic Cluster Collisions 2019" at *Eur. Phys. J. D*.

C.10. Mentoring of students

1. Julia Norbart, *Electron propagation and interaction in materials of biological relevance* (MSc Physical Sciences, Universidad de Murcia, year 2020/2021). Ongoing.
2. Mario Mompean Herrero, *Simulación de la dosis depositada en un biomaterial por una semilla radiactiva* (BSc Physics, Universidad de Murcia, year 2020/2021). Ongoing.
3. Yannick Fortouna, *Sodium deposition on magnesium oxide surfaces: comparison of quantum and classical dynamics simulations* (MSc Fundamental Physics, Université Paul Sabatier, year 2018/2019). Mark: 8.3. An **article submitted** to *Theor. Chem. Accounts*.
4. Laura Pividal Portillo, *Simulación de la interacción de haces de electrones con blancos de interés en ciencia de materiales y medicina* (BSc Physics, Universidad de Murcia, year 2018/2019). Mark: 8.5.

C.11. Research stays (apart from those involving international fellowships)

1. Universidad de Barcelona, with Dr. José María Fernández Varea, 09-31/07/2020.
2. Trento Institute for Fundamental Physics and Applications (Italy), with Dr. Emanuele Scifoni, 10/07/2017 - 25/07/2017.
3. University of Southern Denmark, Odense (Denmark), with Prof. Ilia Solov'yov, 08/06/2017 - 10/07/2017. Short Term Scientific Mission (STSM) COST Action CM1301.
4. MBN Research Center, Frankfurt (Germany), with Prof. Andrey Solov'yov, 01/04/2017 - 30/04/2017 (Sir John Mason Travel Grant); 04/04/2016 - 03/06/2016 (ARGENT ITN); 13/04/2015 - 01/05/2015 (ARGENT ITN);
5. Physikalisch-Technische Bundesanstalt, Braunsweich (Germany), with Prof. Hans Rabus, 04/05/2015 - 05/05/2015.
6. Frankfurt Institute for Advanced Studies (Germany), with Prof. Andrey Solov'yov, 01/03/2013 - 30/06/2013 (STSM COST Action MP1002); 01/03/2012 - 31/05/2012 (Stays Generalitat Valenciana); 24/10/2011 - 04/11/2011 (STSM COST Action MP1002).

C.12. Scientific outreach activities

1. Teacher at the science fair *Semana de la Ciencia y la Tecnología*, Murcia, 08/11/2019.
2. Delegate of the European Project ELENA in *Science is Wonderful! 2019* (European Commission Scientific Outreach Event), Brussels (Belgium), 25/09/19.
3. Delegate of the European project ARGENT in *European Science Open Forum 2016* (European Commission Science Fair), Manchester (UK), July 2016.
4. Teacher in the science workshops for children *El Pati de la Ciència* within the summer school of the University of Alicante, Alicante, years 2008 and 2009.

C.13. Teaching activity

- Theory: Física I (BSc Chemistry, 20h, UM; BSc Chemical Engineering, 15h, UM)
- Seminars: Física Computacional (BSc Physics, 40h, UM); Fundamentos de Física II (BSc Physics, 20h, UM); Advanced Topics in Research (MSc Physical Sciences, 5h, UM); Física Recreativa (BSc Physics, 10h, UM); TUMIEE Summer School (10h, HMU); Computational Methods for Complex Molecular Systems (15h, OU)
- Laboratory: Laboratorio de Física (BSc Physics, 40h, UM); Física (BSc Biology, 40h, UM); Applied Medical Devices (MSc Applied Physics, 18h, QUB); Física (BSc Biology, 40h, UA)
- Code: UM: Universidad de Murcia; HMU: Hellenic Mediterranean University; OU: Open University; QUB: Queen's University Belfast; UA: Universidad de Alicante

C.14. Teaching innovation

1. Participant of the project *Quantum Break: a scientific escape room*, Figueras Pacheco Secondary Education Highschool, Alicante, year 2019/2020, Coordinator: Ángel Ávila
2. Participant of 4 teaching innovation projects at Universidad de Alicante within the *Redes de Innovación Docente*, in the years 2012, 2013, 2014 and 2017. Coordinator: Isabel Abril
3. As a result, author of 4 teaching innovation publications, 1 as a first author (2017/2018).

C.15. Lecturer credentials:

- Profesor Ayudante Doctor
- Profesor Contratado Doctor
- Profesor de Universidad Privada