Part A. PERSONAL INFORMATION

CV date	15/09/2018

First and Family name	Mois Ilia Aroyo		
Social Security, Passport, ID number	X1941807D (NIE)	Age	65
Researcher numbers	Researcher ID		
	Orcid code	0000-0002-9083-6164	

A.1. Current position

Name of University/Institution	Universidad del País Vasco/Euskal Herriko Unibertsitatea			
Department	Física de la Materia Condensada / Facultad de Ciencia y Tecnología			
Address and Country	Barrio Sarriena s/n, 48940, Leioa, Bizkaia, Spain			
Phone number	946012456	E-mail	mois.aroyo@ehu.es	
Current position	profesor agregado		From	2011
Espec. cód. UNESCO	2211.04 2211.05 2213.07 2210.28			
keywords	theoretical and mathematical crystallography, crystallographic and magnetic groups, representations, solid state and structural-chemistry symmetry applications			

A.2. Education

B.Sc, M.Sc, PhD	University	Year
PhD in Physical Sciences	University of Sofía, Bulgaria	1984
B.Sc / M.Sc in Physical Sciences	University of Sofía, Bulgaria	1978/1980

A.3. General indicators of research

Number of 'sexenios' - 5 (the last one 2007-2012)
Number of PhD thesis during the last 10 years - 3
Citations all: 3287 (WOS); 4562 (Google Scholar)
Citations average (2013-2017): 312.2 (WOS); 440.4 (Google Scholar)
Articles Q1: approximately 35
Index h: 25 (WOS); 30 (Google Scholar)
Index i10: 59 (Google Scholar)

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

In general, my research activity has been focused on theoretical and mathematical crystallography and its application to the analysis and structure-property relationship of materials. My fields of expertise include the theory of crystallographic and magnetic groups, sub-group relationships, representations applied to solving problems of solid-state physics and structural chemistry. Among my research activities, it is worth mentioning:

(i) Coordinator - responsible for the implementation and maintenance of the "Bilbao Crystallographic Server" (www.cryst.ehu.es). The server is free accessible via Internet and consists of a number of crystallographic databases and programs for the study of different problems of crystallography physics and solid-state chemistry. The wide popularity of the server among the crystallographic community and its international impact are evidenced by (i) by more than 250,000 citations in Google or direct links to websites such as the National Institute of Standards, Naval Research Laboratory, Yale University, Caltech, National Argonne Laboratory, and others dedicated to information on Materials Science, Condensed Matter Physics, Chemistry Solids, etc, (ii) by more than 1000 daily visits of the server and working sessions from users all around the world, and (iii) since the launch of the server in 1997, the International Union of Crystallography (IUCr), editor of the most prestigious journals in the field and of the series *International Tables of Crystallography*, has been interested in the development of a similar website for IUCr - a project that our research group had been closely collaborating with IUCr during the last years.

(ii) Coordinator - responsible for the cooperation of the UPV / EHU with the International Union of Crystallography for the development and implementation of the "Symmetry Database" server that is part of *International Tables of Crystallography* online (http://it.iucr.org) published by the International Union of Crystallography. The "Symmetry Database" is a unique resource that provides more extensive crystallographic information than that of the printed editions of the *International Tables for Crystallography*, volumes A, A1 and E. The interactivity of the online database has become an essential tool to deepen scientific studies and for teaching crystallography.

(iii) Editor of Volume A of the *International Tables for Crystallography* (ITC) published by the International Union of Crystallography: ITC are widely regarded as the definitive source and the reference work for crystallography (more than 295 000 citations in Google). Volume A of ITC is the most widely used of the eight volumes of the series and is the essential source of information for scientists using crystallographic methods who are involved in the investigation of the structure and properties of crystalline materials.

Part C. RELEVANT MERITS

C.1. Publications (including books)

26. Jennifer Cano, Barry Bradlyn, Zhijun Wang, L. Elcoro, M. G. Vergniory, C. Felser, M. I. Aroyo & B. Andrei Bernevig (2018). *Phys. Rev.* **B 97**, 035139-1 - 035139-20.
25. Barry Bradlyn, L. Elcoro, M. G. Vergniory, Jennifer Cano, Zhijun Wang, C. Felser, M. I. Aroyo & B. Andrei Bernevig (2018). Band connectivity for topological quantum chemistry: Band structures as a graph theory problem. *Phys. Rev.* **B 97**, 035138-1 - 035138-17.
24. L. Elcoro, Barry Bradlyn, Zhijun Wang, M. G. Vergniory, Jennifer Cano, C. Felser, B. Andrei Bernevig & M. I. Aroyo (2017). Double crystallographic groups and their representations on the Bilbao Crystallographic Server, *J. Appl. Cryst*. **50**, 1457-1477.
23. Barry Bradlyn, L. Elcoro, Jennifer Cano, M. G. Vergniory, Zhijun Wang, C. Felser, M. I. Aroyo & B. Andrei Bernevig (2017). Topological Quantum Chemistry. *Nature*, 547, 298-305.
22. M. G. Vergniory, L. Elcoro, Zhijun Wang, Jennifer Cano, C. Felser, M. I. Aroyo, B. Andrei Bernevig & Barry Bradlyn (2017). Band connectivity for topological quantum chemistry: Band structures as a graph theory problem. *Phys. Rev.* **E 96,** 023310-1 - 0233130-23.
21. Mois I. Aroyo (2016): Editor *International Tables for Crystallography*, Vol. A: *Space-group symmetry*, 6th Printed Edition and 2nd Online Edition, IUCr, Wiley: Chichester.
20. S. V. Gallego, J.M. Perez-Mato, L. Elcoro, E. Tasci, R. Hanson, K. Momma, M.I. Aroyo and G. Madariaga (2016). MGNDATA: towards a database of magnetic structures. II. The incommensurate case. *J. Appl. Cryst*. **49**, 1941-1956.
19. S. V. Gallego, J.M. Perez-Mato, L. Elcoro, E. Tasci, R. Hanson, K. Momma, M.I. Aroyo and G. Madariaga (2016). MGNDATA: towards a database of magnetic structures. I. The commensurate case. *J. Appl. Cryst*. **49**, 1750-1776.
18. M. Nespolo and M.I. Aroyo (2016). The crystallographic chameleon: when space groups change skin. *Acta Cryst* A**72**, 523-538.
17. J.M. Perez-Mato, S. V. Gallego, L. Elcoro, E. Tasci and M.I. Aroyo (2016). Symmetry conditions for type II multiferroelectricity in commensurate magnetic structures. *J. Phys. Condens. Matter*, **28**, 286001-1 -286001-15.
16. G. De la Flor, D. Orobengoa, E. Tasci, J.M. Perez-Mato and M.I. Aroyo (2016). Comparison of structures applying the tools available at the Bilbao Crystallographic Server. *J.Appl. Cryst*. 49, 653-664.
15. M. Nespolo and M.I. Aroyo (2016). The modular structure of pyroxenes (2016). *Eur. J. Mineral*. **28**, 189-203.
14. J.M. Perez-Mato, S. V. Gallego, E. Tasci, L. Elcoro, G. De la Flor and M.I. Aroyo (2015). Symmetry based computational tools for magnetic crystallography. *Annu. Rev. Mater. Res*. **45**, 13.1 - 13.32.
13. M.I. Aroyo, D. Orobengoa, G. De la Flor, E. Tasci, J.M. Perez-Mato and H. Wondratschek (2014) Brillouin-zone database on the Bilbao Crystallographic Server. *Acta Crystallogr*. A**70**, 126 -137.
12. A. Michael Glazer, Mois I. Aroyo and Andre Authier (2014). Seitz symbols of crystallographic symmetry operations. *Acta Crystallogr*. A**70**, 300-302.
11. M.I. Aroyo, J.M. Perez-Mato, D. Orobengoa, G. De la Flor, E. Tasci and A. Kirov (2011). Crystallography Online: Bilbao Crystallographic Server. *Bulgarian Chemistry Communications*, vol. **43**, 183-197.

10. M.I. Aroyo, J-M- Perez-Mato, C. Capillas and H. Wondratschek.The Bilbao Crystallographic Server. In *International Tables for Crystallographie, vol.A1*: Symmetry relationships between space groups, eds. H. Wondratschek and U. Mueller, 2nd Edition, pp.57-69, John Wiley & Sons, Chichester, 2010, ISBN: 978-0-470-66079
9. Y. Billiet, M.I. Aroyo, and H. Wondratschek. Tables of maximal subgroups of the space groups. In *International Tables for Crystallographie, vol.A1*: Symmetry relationships between space groups, eds. H. Wondratschek and U. Mueller, 2nd Edition, pp.57-69, John Wiley & Sons, Chichester, 2010, ISBN: 978-0-470-66079
8. J.M. Perez-Mato, D. Orobengoa and M.I. Aroyo (2010). Mode crystallography of distorted structures. *Acta Crystallogr.* A **66,** 558-590.
7. M.I. Aroyo, J.M. Perez-Mato, C. Capillas, E. Kroumova, S. Ivantchev , G. Madariaga, A. Kirov and H. Wondratschek (2006). Bilbao crystallographic server: Databases and crystallographic computing programs. *Zeitschrift fur Kristallographie*. Oldenbourg Verlag. **221**, 15-27.
6. M.I. Aroyo, A. Kirov, C. Capillas, J.M. Perez-Mato, H. Wondratschek (2006). Bilbao Crystallographic Server: II. Representations of crystallographic point and space groups. *Acta Crystallogr.* A**62**, 115-128.
5. H. Wondratschek., M.I. Aroyo (2001). The application of Hermann's group M in group-subgroup relations between space groups. *Acta Crystallogr.* A**57**, 311-320.
4. J.M. Perez-Mato, M.I. Aroyo, J. Hlinka, M. Quilichini and R. Currat (1998). Phonon Symmetry Selection Rules for Inelastic Neutron Scattering. *Phys. Rev. Lett.* **81**, 2461-2465.
3. M.I. Aroyo and J.M. Perez-Mato (1998). Symmetry-Mode Analysis of Phase Transitions Using International Tables for Crystallography. *Acta Crystallogr.* A**54**, 19-30.
2. M.I. Aroyo, J.N.Kotzev, M.N.Angelova-Turkedjieva, R.Dirl, P.Kasperkovitz (1986). Generating Relations for Reducing Matrices. II. Corepresentations. *J. Math. Phys*. 27, 2236-2246.
1. J.N. Kotzev, M.I. Aroyo (1980). Clebsch-Gordan coefficients for corepresentations of Shubnikov point groups. *J. Phys*. A**13**, 2275-2286.

C.2. Research projects and grants (last 10 years)

1. Grupos de investigación consolidados: Propiedades estructurales y dinamicas de solidos. G. Madariaga; Gobierno del Pais Vasco IT779-13; 01/01/2013 -31/12/2018 ; 262 798 Eur.
2. Síntesis, estructura y propiedades de nuevos materiales ferroicos y multiferroicos; G. Madariaga; MICINN (o MINECO) MAT2012-34740; 01/01/2013 -31/12/2015 : 175 000 Eur.
3. Estructura y propiedades en materiales ferroicos y multiferroicos. J.M. Perez-Mato; Ministerio de Ciencia e Innovación MAT2008-05839; 01/01/2009-31/12/2011; 167.790 Eur.
4. Grupos de investigación consolidados: Propiedades estructurales y dinamicas de solidos. J.M. Perez-Mato; Gobierno del Pais Vasco; 01/01/2007-12/2012; 563.474,12 Eur.
5. Crystallography online: Intl. school on the use and applications of the Bilbao Crystallographic Server; M.I. Aroyo; International Union for Crystallogr. 21/06/2009-27/06/2009 4000 USD.
6. Mecanismos atómicos en transiciones estructurales: aplicaciones a materiales ferroeléctricos y ferroicos. J.M. Perez-Mato; Ministerio de Educación y Ciencia MEC05/121; 31/12/2005-31/12/2008 102.528 Eur.
7. Growth, characterization and study of the physical properties of the novel single crystals from the systems Bi-Co(Ni)-Mn(Ru)-O and La-Co(Ni)-Mn(Ru)-O with magnetoelectric /multiferroic behaviour; M. Gospodinov; Bulgarian Science Foundation;12/2007-12/2010; 100 000 BGL.
8. Estructuras cristalinas y propiedades de nuevos materiales funcionales en condiciones no ambientales; Andrzej Grzechnic; Ministerio de Educación y Ciencia FIS2005-07090; 31/12/2005-31/12/2008 54000 Eur.

C.3. Contracts

1. Computer production of International Tables for Crystallography, vol.A: Space Group Symmetry; M.I. Aroyo; International Union of Crystallography (IUCr); 1997-2000; 10 000 USD.
2. Computer production of International Tables for Crystallography, vol.E: Subperiodic groups M. I. Aroyo; IUCr; 2000-2001; 7 500 USD.
3. Space-group data for Internacional Tables for Crystallography on-line; M.I. Aroyo; IUCr; 07/2006-04/2007; 16 900 Eur.

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4. Enhancement of the online edition of International Tables for Crystallography; M.I. Aroyo IUCr; 07/2008-05/2009; 36 760 Eur
5. Symmetry Database of the online edition of International Tables for Crystallography: Symmetry relations between space groups; M.I. Aroyo; IUCr; 07/2012 -06/2013; 22 540 Eur.

C.5. Paricipation in congresses/conferences
more than 170 contributions to congresses and conferences

C.6. Editor
- *International Tables for Crystallography*, Vol. A: Space-group symmetry, 6th Printed Edition and 2nd Online Edition, IUCr, Wiley: Chichester, 2016 (ISBN: 978-0-470-97423-0)
- *Brief Teaching Edition of International Tables for Crystallography*, Vol. A (IUCr)
- Symmetry Database of the Online Edition of *International Tables for Crystallography* (IUCr)

C.7. Participation in international commissions and committees
1996 – 2001 SYMCIF subcomisión of the International Union of Crystallography (IUCr) (Member)
2002 – 2008 Dictionary Maintenance Group of the SYMCIF dictionary of IUCr (Member)
since 2004 International Tables on-line working group of IUCr (Member)
2005 – 2014 Commission on Mathematical and Theoretical Crystallography of IUCr (Member)
2014 - 2017 Commission on Mathematical and Theoretical Crystallography of IUCr (Chair)
since 2017 Commission on Mathematical and Theoretical Crystallography of IUCr (Consultant)
since 2008 Commission on International Tables for Crystallography (Member)
since 2008 Commission on Crystallographic Nomenclature of IUCr (Member)
since 2011 Commission on Crystallographic Teaching of IUCr (Consultant)
since 2012 Commission on Magnetic Structures of IUCr (Consultant)

C.8. Lecture courses (international schools/workshops) (last 5 years)
Donosti-San Sebastian (Spain), 2018; Oviedo (Spain), 2018; Sofia (Bulgaria), 2017; Rourkela (India), 2017; Shanghai (China), 2017; Stuttgart (Germany), 2017; Havana (Cuba), 2016; Antwerp (Belgium), 2016;, Donosti-San-Sebastian(Spain), 2016; Rimini (Italy), 2016; Istanbul (Turkey), 2015; Mieres (Spain), 2015; Varanasi (India), 2014; Bloemfontein (South Africa), 2014; Hamilton (Canada), 2014; La Plata (Argentine), 2014.

C.9. Grants, invitations
Beca de excelencia academica (Sofia University), 1974-1975, 1975-1976; 1976-1977, 1977-1978
Alexander von Humboldt Foundation (Germany) 1987-1989
WE-Heraeus Stiftung (Germany) 1991
Ministère de la Recherche et de l'Espace (France) 1992 (postdoc)
DEUI del Gobierno Vasco (Spain) 1995 (postdoc)
Ministerio de la Educación y Ciencia (Spain) 1995 (sabático)
Concesión de un programa de Alexander von Humboldt Stiftung im Rahmen des Stabilitätspakts Südosteuropa (2001)
Université Henri Poincaré, Nancy (France) 2007 (invited professor)
Université de Lorraine, Nancy (France) 2014, 2017 (invited profesor)

C.10. Experience in organizing research international activities (last 5 years)
Oviedo (Spain), 2018: 31st European Crystallographic Conf. (Member Intl. Prog. Committee)
Oviedo (Spain), 2018: Intl. Workshop: Crystallography online (Member Organ. Committee)
Sofia (Bulgaria), 2017: Intl. School Fund. Electron Crystallogr. (Chair Intl. Program Committee)
Rourkela (India), 2017: Intl. School Fund. Crystallogr. (Chair Intl. Program Committee)
Shanghai (China), 2017: Shanghai Intl. Crystallogr. School. (Chair Intl. Program Committee)
Havana (Cuba), 2016: Intl. School Fund. Crystallogr. (Chair Intl. Program Committee)
Rimini (Italy), 2016: Polymorphism, stability, phase transitions in crystals (Co-chair Intl. Sci. Comm.)
Istanbul (Turkey), 2015:2nd Balkan School on Fundamental Crystallogr. (Member Intl. Prog. Comm.)
Varanasi (India), 2014: MathCryst Workshop (Member Intl. Program Committee)
Bloemfontein (South Africa), 2014: Intl. School Fund. Crystallogr. (Member Intl. Prog. Committee)
Hamilton (Canada), 2014: Workshop Magnetic Symmetry (Member of Intl. Advisory Committee)
La Plata (Argentine), 2014: Intl. School Fund. Crystallogr. (Member Intl. Program Committee)
Gjulechitza (Bulgaria), 2013: Intl. School Fund. Crystallogr. (Chair Intl. Program Committee)