Curriculum Vitæ

Personal information

Name	Omar De la Peña-Seaman
Work address	Instituto de Física (IFUAP), Benemérita Universidad Autónoma de Puebla (BUAP), Av. San Claudio y Blvd. 18 Sur, Ciudad Universitaria, 72570, Puebla, Puebla, México
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ORCiD	orcid.org/0000-0001-6590-3807
Date of birth	February 7th, 1979
Place of birth	México City, México

Work Experience

05/2011 – present **Professor and Senior Scientist**, *Instituto de Física (IFUAP), Benemérita Universidad Autónoma de Puebla (BUAP)*, Puebla, Puebla, México.

10/2010 – 04/2011 **Guest Researcher**, *Institute of Solid State Physics (IFP), Karlsruher Institute of Technology (KIT)*, Karlsruhe, Germany.

06/2008 – 09/2010 **Posdoctorant**, *Institute of Solid State Physics (IFP), Karlsruher Institute of Technology (KIT)*, Karlsruhe, Germany.

02/2008 – 05/2008 **Research Assistant**, *Department of Applied Physics, Cinvestav-Mérida*, Mérida, Yucatán, México.

Education

09/2004 – 01/2008 **PhD/Theoretical Physics**, *Department of Applied Physics, Cinvestav-Mérida*, Mérida, Yucatán, México, *Thesis: First principles study of the electron-phonon interaction in superconducting metallic alloys*.
Advisors: Dr. Romeo de Coss, Dr. Klaus-Peter Bohnen

09/2002 – 08/2004 **MSc/Applied Physics**, *Department of Applied Physics, Cinvestav-Mérida*, Mérida, Yucatán, México, *Thesis: Study of the structural and electronic properties of the MgB_2 superconducting based alloys*.
Advisor: Dr. Romeo de Coss

09/1997 – 08/2002 **Bachelor/Physics Engineering**, *Engineering School (FIUADY), Yucatán University (UADY)*, Mérida, Yucatán, México, *Thesis: Study of the structural and electronic properties of the superconducting compound $Mg_{1-x}Al_xB_2$*.
Advisor: Dr. Romeo de Coss

Languages

Spanish	Native	*Mothertonge*
English	Fluent	*Daily practice, publications and conferences performed in English*
German	Intermediate	*Conversationally fluent*

Honors and Awards

SNI Sistema Nacional de Investigadores, Consejo Nacional de Ciencia y Tecnología (CONACyT), México, Level 2 – (2020–2023); Level 1 – (2010–2016), (2016–2019)

PRODEP Secretaría de Educación Pública (SEP), México, Perfil *Deseable* – (2013–2016), (2017–2020), (2020–2023) Perfil *Nuevo PTC* – (2012–2013)

Premio IIM–UNAM Best PhD thesis, Science and Engineering Materials Area, *Certamen Nacional 2008*, Materials Research Institute (IIM), Universidad Nacional Autónoma de México (UNAM), México.

Premio IMJ 2002 First Place at *Certamen Nacional Juvenil de Ciencia y Tecnología 2002*, Instituto Mexicano de la Juventud (IMJ), México. Project: *Study of the structural and electronic properties of the supercondicting* $Mg_{1-x}Al_xB_2$ *alloy*.

Direction of Thesis

01/2021 – current **PhD/Materials Science**, *Instituto de Física (IFUAP), Benemérita Universidad Autónoma de Puebla (BUAP)*, Puebla, Pue., México, Thesis: *Propiedades vibracionales y magnetismo en FeGe bajo presión*.
Student: Raúl Alfonso Tonacatl Monez

08/2020 – current **PhD/Materials Science**, *Instituto de Física (IFUAP), Benemérita Universidad Autónoma de Puebla (BUAP)*, Puebla, Pue., México, Thesis: *Dinámica de red y acoplamiento electrón-fonón en* $Fe_{1-x}Co_xGe$*: Efectos del magnetismo*.
Student: José Andrés Núñez Ávila

01/2012 – 10/2017 **PhD/Applied Physics**, *Department of Applied Physics, Cinvestav–Mérida*, Mérida, Yucatán, México, Thesis: *Acoplamiento electrón–fonón en materiales bidimensionales tensionados en fases metaestables*.
Student: Miguel Eduardo Cifuentes-Quintal

01/2013 – 07/2017 **PhD/Materials Science**, *Instituto de Física (IFUAP), Benemérita Universidad Autónoma de Puebla (BUAP)*, Puebla, Pue., México, Thesis: *Estudio del efecto de depoaje electrónico en la estabilidad de hidruros metálicos*.
Student: Mónica Olea-Amezcua

12/2014 – 02/2017 **MSc/Physics**, *Instituto de Física (IFUAP), Benemérita Universidad Autónoma de Puebla (BUAP)*, Puebla, Pue., México, Thesis: *Propiedades vibracionales y acoplamiento electrón–fonón de* $Ac_{1-x}Th_x$.
Student: Romeo de Coss-Martínez

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12/2012 – 02/2014 **MSc/Physics**, *Instituto de Física (IFUAP), Benemérita Universidad Autónoma de Puebla (BUAP)*, Puebla, Pue., México, Thesis: *Propiedades vibracionales y acoplamiento electrón–fonón de actinio: efecto de la interacción espín–órbita*.
Student: Paola González-Castelazo

11/2011 – 12/2012 **MSc/Physics**, *Instituto de Física (IFUAP), Benemérita Universidad Autónoma de Puebla (BUAP)*, Puebla, Pue., México, Thesis: *Estudio del efecto de magnetismo en las propiedades vibracionales de la aleación Ni–Cu*.
Student: Iván Bustamante-Romero

Direction of Postdoctoral Positions

08/2019 – 07/2021 **Estancias Posdoctorales CONACyT**, *Instituto de Física (IFUAP), Benemérita Universidad Autónoma de Puebla (BUAP)*, Puebla, Pue., México, Project: *Modificación del estado superconductor en hidrúros metálicos por medio del dopaje electrónico*.
Posdoctorant: Dr. Sergio Villa Cortés

Scientific and Academic Activities

Publications 23 publications on high-ranked journals of the Condensed Matter area, like *Phys. Rev. B, J. Phys.: Condens. Matter*, among others.

Conferences Organization of 7 national and international scientific events, like the the *First Graduate Student Physics Meeting CAM 2003*, by APS, CAP, and SMF, the *International Materials Research Congress (IMRC)* in 2013, 2014, and 2019, and the *Congreso Nacional de Física (CNF)* in 2018, as well as participation with 93 presentations (posters, contributed and invited talks) in national and international scientific events.

Seminars 11 participations as seminar speaker in national and international institutions, like UNAM, BUAP, Cinvestav, and KIT.

Projects Responsible of 8 scientific projects (with funding) and participant in 8 joint-projects.

Teaching 25 given lectures and courses (full-semester) among physics and mathematics topics on graduate (PhD, MSc) and undergraduate levels.

Journal Review Reviewer of high-ranked journals like *Phys. Rev. Lett., Phys. Rev. B, Phys. Rev. Research, J. Phys.: Condens. Matter*, among others.

Editor Associate Editor of the *Boletín SMF* since October 2021

Publications

List of Publications

10/2021 22 S. Villa-Cortés and O. De la Peña-Seaman, **Effect of van Hove singularity on the isotope effect and critical temperature of H_3S hydride superconductor as a function of pressure**, *J. Phys. Chem. Solids* **161** *110451* (2022).

10/2021 21 S. Villa-Cortés and O. De la Peña-Seaman, **Electron- and hole-doping on ScH_2 and YH_2: Effects on superconductivity without applied pressure**, *J. Phys.: Condens. Matter* **33** *425401* (2021).

06/2019 20 M.A. Olea-Amezcua, O. De la Peña-Seaman, and R. Heid, **Superconductivity by doping in alkali-metal hydrides without applied pressure: An ab initio study**, *Phys. Rev. B* **99** *214504* (2019).

01/2019 19 J.J. Rios-Ramirez, J.F. Rivas-Silva, A. Flores-Riveros, O. De la Peña-Seaman, and G. Hernandez-Cocoletzi, **Comparing two high correlation models to test the mechanical stability of americium-II**, *J. Phys.: Condens. Matter* **31** *085601* (2019).

08/2017 18 R. de Coss-Martínez, P. González-Castelazo, O. De la Peña-Seaman, R. Heid, and K.-P. Bohnen, **Effects of doping on lattice dynamics and electron-phonon coupling of the actinides Ac-Th alloy**, *J. Phys.: Condens. Matter* **29** *355401* (2017).

07/2017 17 M.E. Cifuentes-Quintal, O. De la Peña-Seaman, and R. de Coss, **Comment on "Electron-phonon coupling in two-dimensional silicene and germanene"**, *Phys. Rev. B* **96** *047401* (2017).

03/2017 16 M.A. Olea-Amezcua, J.F. Rivas-Silva, O. De la Peña-Seaman, R. Heid, and K.-P. Bohnen, **Effects of electron doping on the stability of the metal hydride NaH**, *J. Phys.: Condens. Matter* **29** *145401* (2017).

08/2016 15 M.E. Cifuentes-Quintal, O. De la Peña-Seaman, R. Heid, R. de Coss, and K.-P. Bohnen, **Uniaxial strain-induced Kohn anomaly and electron-phonon coupling in acoustic phonons of graphene**, *Phys. Rev. B* **94** *085401* (2016).

06/2016 14 I. Bustamante-Romero, O. De la Peña-Seaman, R. Heid, and K.-P. Bohnen, **Effect of magnetism on lattice dynamical properties in the Ni-Cu alloy from first principles**, *J. Magn. Magn. Mater.* **490** *97* (2016).

05/2016 13 M. d'Astuto, R. Heid, B. Renker, F. Weber, H. Schober, O. De la Peña-Seaman, J. Karpinski, N.D. Zhigadlo, A. Bossak, and M. Krisch, **Nonadiabatic effects in the phonon dispersion of $Mg_{1-x}Al_xB_2$**, *Phys. Rev. B* **93** *180508* (2016).

03/2016 12 P. González-Castelazo, R. de Coss-Martínez O. De la Peña-Seaman, R. Heid, and K.-P. Bohnen, **Electron-phonon coupling and superconductivity in the light actinides: A first-principles study**, *Phys. Rev. B* **93** *104512* (2016).

10/2013 11 R. Cortes-Maldonado, O. De la Peña-Seaman, V. Garcia-Vázquez, and F. Pérez-Rodríguez., **On the extended elliptic critical-state model for hard superconductors**, *Supercond. Sci. Technol.* **26** *125001* (2013).

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11/2012 10 O. De la Peña-Seaman, R. Heid, and K.-P. Bohnen, **Electron-phonon interaction and superconductivity in Tl-Pb-Bi alloys from first principles: Importance of spin-orbit coupling**, *Phys. Rev. B* **86** *184507* (2012).

06/2012 09 O. De la Peña-Seaman, R. Heid, and K.-P. Bohnen, **First-principles study of phonon properties in magnetic double-layer manganites**, *Phys. Rev. B* **86** *014301* (2012).

12/2010 08 O. De la Peña-Seaman, R. de Coss, R. Heid, and K.-P. Bohnen, **Electron-phonon coupling and two-band superconductivity of Al- and C-doped MgB_2**, *Phys. Rev. B* **82** *224508* (2010).

02/2010 07 R. Schneider, A.G. Zaitsev, O. De la Peña-Seaman, R. de Coss, R. Heid, K.-P. Bohnen, and J. Geerk, **Electron tunneling spectroscopy on superconducting Al doped MgB_2 thin films: π energy gap and Eliashberg function**, *Phys. Rev. B* **81** *054519* (2010).

02/2010 06 K.-P. Bohnen, R. Heid, and O. De la Peña-Seaman, **Ab-initio lattice dynamics and thermodynamics of RuO_2 (110) surfaces**, *Phys. Rev. B* **81** *081405(R)* (2010).

04/2009 05 O. De la Peña-Seaman, R. de Coss, R. Heid, and K.-P. Bohnen, **Effects of Al- and C-doping MgB_2 on the electronic structure and phonon renormalization**, *Phys. Rev. B* **79** *134523* (2009).

11/2007 04 O. De la Peña-Seaman, R. de Coss, R. Heid, and K.-P. Bohnen, **First principles study of phonons and superconductivity of $Nb_{1-x}Mo_x$ within the virtual-crystal approximation**, *J. Phys.: Condens. Matter* **19** *476216* (2007).

11/2007 03 O. De la Peña-Seaman, R. de Coss, R. Heid, and K.-P. Bohnen, **Ab-initio study of the structural, electronic, and phononic properties of $Nb_{1-x}Mo_x$ using the self-consistent virtual-crystal approximation**, *Phys. Rev. B* **76** *174205* (2007).

03/2007 02 K.-P. Bohnen, R. Heid, O. De la Peña-Seaman, B. Renker, P. Adelmann, and H. Shober, **Lattice dynamics of RuO_2: Theory and experiment**, *Phys. Rev. B* **75** *092301* (2007).

07/2002 01 O. De la Peña-Seaman, A. Aguayo, and R. de Coss, **Effects of Al- and C-doping on the structural and electronic properties of $Mg_{1-x}Al_xB_2$**, *Phys. Rev. B* **66** *012511* (2002).

List of Proceedings

06/2012 01 A.G. Zaitsev, R. Schneider, O. De la Peña-Seaman, R. de Coss, R. Heid, K.-P. Bohnen, and J. Geerk, **Electron tunneling spectroscopy measurements on Al-doped MgB_2 thin films**, *Physics Procedia* **36** *479* (2012).

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