

## List of publications of Dr. Antonio J. Gil, ICCP, CAS, PhD, SFHEA

### I. Books.

3. J. Bonet, **A.J. Gil** and R.D. Wood, “Nonlinear Solid Mechanics for Finite Element Analysis – Dynamics”, Cambridge University Press, January 2021, [ISBN: 9781316336083](#).
2. J. Bonet, **A.J. Gil** and R.D. Wood, “Nonlinear Solid Mechanics for Finite Element Analysis – Statics”, Cambridge University Press, June 2016, [ISBN: 9781107115798](#).
1. J. Bonet, **A.J. Gil** and R.D. Wood, “Worked examples in Nonlinear Continuum Mechanics for Finite Element Analysis”, Cambridge University Press, October 2012, [ISBN: 9781107603615](#).

### II. Invited contribution to books.

4. J. Bonet and **A.J. Gil**, “Numerical simulation of thin sheet superplastic forming processes by the finite element method”, in “*Superplastic forming of advanced metallic materials: methods and applications*”, Woodhead Publishing Limited, Cambridge. Ed. G. Giuliano, July 2011, [ISBN: 9781845697532](#).
3. R.V. Curtis and **A.J. Gil**, “Superplastic Forming of Dental and Maxillofacial Prostheses”, in “*Dental biomaterials: Imaging, testing and modelling*”, Woodhead Publishing Limited, Cambridge. Eds. R V Curtis and T F Watson, March 2008, [ISBN: 9781845692964](#).
2. **A.J. Gil**, “F.E.M. for Prestressed Saint Venant-Kirchhoff Hyperelastic Membranes”. In “*Textile Composites and Inflatable Structures*”, ed. by E. Oñate and B. Kroplin, Springer, 2005, [ISBN: 978-1-4020-3316-2](#).
1. **A.J. Gil**, “Métodos numéricos para el diseño de estructuras traccionadas: membranas y redes de cables”, ed. by University of Granada, 2001, [ISBN: 84-699-6831-9](#).

### III. Editorial books and journals.

3. **A.J. Gil** and R. Sevilla, “Proceedings of the 23<sup>rd</sup> Conference on Computational Mechanics ACME-UK 2015”, Swansea University, [ISBN: 978-0-9567462-4-5](#).
2. **A.J. Gil** and R. Sevilla, “Proceedings of the Institution of Civil Engineers - Engineering and Computational Mechanics”, Volume 169, Issue 3, 2016, [ISSN: 1755-0777](#).
1. **A.J. Gil**, R. Sevilla and B.H.V. Topping, “Proceedings of the 23<sup>rd</sup> Conference on Computational Mechanics ACME-UK 2015”, Computers and Structures, Special Issue, Volume 181, 2017, [ISSN: 0045-7949](#).

### IV. Full papers in refereed journals.

#### Under review

70. J. Bonet and **A.J. Gil**, “Mathematical models of supersonic and intersonic crack propagation in linear elastodynamics”, *International Journal of Fracture*.

69. A. Ghavamian, **A.J. Gil**, C.H. Lee, J. Bonet, T. Heuzé and L. Stainier, “An entropy stable Smooth Particle Hydrodynamics algorithm for large strain thermo-elasticity”, *Computer Methods in Applied Mechanics and Engineering*.
68. F. Marín, J. Martínez-Frutos, R. Ortigosa and **A.J. Gil**, “Convex Multi-Variable based Computational Framework for Multilayered Electro-Active Polymers”, *Computer Methods in Applied Mechanics and Engineering*.

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67. K.W.Q. Low, C.H. Lee, **A.J. Gil**, J. Haider and J. Bonet, “A parameter-free Total Lagrangian Smooth Particle Hydrodynamics algorithm for inviscid fluid flow problems”, *Computational Particle Mechanics*.
66. J. Bonet, C. H. Lee, **A.J. Gil**, A. Ghavamian, “A first order hyperbolic framework for large strain computational solid dynamics. Part III: Thermo-elasticity”, *Computer Methods in Applied Mechanics and Engineering*.
65. R. Ortigosa, **A.J. Gil**, J. Martínez-Frutos, M. Franke and J. Bonet, “A new energy-momentum time integration scheme for non-linear thermo-mechanics”, *Computer Methods in Applied Mechanics and Engineering*, Volume 372, 2020, pages 113395, doi: [10.1016/j.cma.2020.113395](https://doi.org/10.1016/j.cma.2020.113395) .
64. G. Barroso, M. Seoane, **A. J. Gil**, P. D. Ledger, A. Huerta, M. Mallett, “A staggered high-dimensional Proper Generalised Decomposition for coupled magneto-mechanical problems with application to MRI scanners”, *Computer Methods in Applied Mechanics and Engineering*, Volume 370, 2020, doi: [10.1016/j.cma.2020.113271](https://doi.org/10.1016/j.cma.2020.113271)
63. M. Seoane, P.D. Ledger, **A.J. Gil**, S. Zlotnik and M. Mallett, “A combined Reduced Order-Full Order methodology for the Solution of 3D Magneto-Mechanical problems with application to MRI Scanners”, *International Journal for Numerical methods in Engineering*, Volume 121, 2020, pages 3529-3559 doi: [10.1002/nme.6369](https://doi.org/10.1002/nme.6369)
62. R. Ortigosa, D. Ruiz, **A.J. Gil**, A. Donoso and J.C. Bellido, “A stabilisation approach for topology optimisation of hyperelastic structures with the SIMP method”, *Computer Methods in Applied Mechanics and Engineering*, Volume 364, 2020, 112924, doi:[10.1016/j.cma.2020.112924](https://doi.org/10.1016/j.cma.2020.112924)
61. G. Barroso, **A. J. Gil**, P. D. Ledger, A. Huerta, M. Mallett, “A regularised-adaptive Proper Generalised Decomposition implementation for coupled magneto-mechanical problems with application to MRI scanners”, *Computer Methods in Applied Mechanics and Engineering*, Volume 358, 2020, 112640, doi:[10.1016/j.cma.2019.112640](https://doi.org/10.1016/j.cma.2019.112640)

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60. M. Franke, R. Ortigosa, **A.J. Gil**, P. Betsch, “Mixed frameworks and structure preserving integration for coupled electro-elastodynamics”, *Proceedings in Applied Mathematics & Mechanics*, 2019, doi:[10.1002/pamm.201900014](https://doi.org/10.1002/pamm.201900014)
59. E. Garcia-Blanco, R. Ortigosa, **A.J. Gil** and J. Bonet, “Towards an efficient computational strategy for electro-activation in cardiac mechanics”, *Computer Methods in Applied Mechanics and Engineering*, Volume 356, 2019, pages 220-260, doi:[10.1016/j.cma.2019.06.042](https://doi.org/10.1016/j.cma.2019.06.042)
58. R. Ortigosa, J. Martínez Frutos, **A. J. Gil** and D. Herrero-Pérez “A new stabilisation approach for level set based topology optimisation of hyperelastic materials”, *Structural and Multidisciplinary Optimization*, 2019, doi: [10.1007/s00158-019-02324-5](https://doi.org/10.1007/s00158-019-02324-5)

57. O.I. Hassan, A. Ghavamian, C.H. Lee, **A.J. Gil**, J. Bonet and F. Auricchio, “An upwind finite volume algorithm for nearly and truly incompressible explicit fast solid dynamic applications: Total and Updated Lagrangian formulations”, *Journal of Computational Physics*, 2019, doi: [10.1016/j.jcp.2019.100025](https://doi.org/10.1016/j.jcp.2019.100025)
56. M. Seoane, P.D. Ledger, **A.J. Gil** and M. Mallett, “An accurate and efficient three dimensional high order finite element methodology for the simulation of magneto-mechanical coupling in MRI scanners”, *International Journal for Numerical methods in Engineering*, Volume 119, 2019, pages 1185-1215, doi: [10.1002/nme.6088](https://doi.org/10.1002/nme.6088)
55. R. Ortigosa, M. Franke, A. Janz, **A.J. Gil**, and P. Betsch, “A mixed variational framework for the design of energy-momentum integration schemes based on convex multi-variable electro-elastodynamics”, *Computer Methods in Applied Mechanics and Engineering*, Volume 351, 2019, pages 109-152, doi: [10.1016/j.cma.2019.03.036](https://doi.org/10.1016/j.cma.2019.03.036)
54. E. Garcia-Blanco, R. Ortigosa, **A.J. Gil**, C.H. Lee and J. Bonet, “A polyconvex computational formulation for electro-activation in cardiac mechanics”, *Computer Methods in Applied Mechanics and Engineering*, Volume 348, 2019, pages 796-845, doi: [10.1016/j.cma.2019.01.042](https://doi.org/10.1016/j.cma.2019.01.042)
53. R. Poya, **A.J. Gil**, R. Ortigosa and R. Palma, “On a family of numerical models for couple stress based flexoelectricity for continua and beams”, *Journal of the Mechanics and Physics of Solids*, Volume 125, 2019, pages 613-652, doi: [10.1016/j.jmps.2019.01.013](https://doi.org/10.1016/j.jmps.2019.01.013)
52. C.H. Lee, **A.J. Gil**, A. Ghavamian and J. Bonet, “A Total Lagrangian upwind Smooth Particle Hydrodynamics algorithm for large strain explicit solid dynamics”, *Computer Methods in Applied Mechanics and Engineering*, Volume 344, 2019, pages 209-250, doi: [10.1016/j.cma.2018.09.033](https://doi.org/10.1016/j.cma.2018.09.033)

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51. J. Haider, C.H. Lee, **A.J. Gil**, J. Bonet and A. Huerta, “An extended set of first-order hyperbolic conservation laws for large strain computational solid dynamics: An upwind cell centred Total Lagrangian scheme for nearly incompressible scenarios”, *Computer Methods in Applied Mechanics and Engineering*, Volume 340, 2018, pages 684-727, doi: [10.1016/j.cma.2018.06.010](https://doi.org/10.1016/j.cma.2018.06.010)
50. R. Ortigosa, M. Franke, A. Janz, **A.J. Gil**, and P. Betsch, “An energy-momentum time integration scheme based on a convex multi-variable framework for non-linear electro-elastodynamics”, *Computer Methods in Applied Mechanics and Engineering*, Volume 339, 2018, pages 1-35, doi: [10.1016/j.cma.2018.04.021](https://doi.org/10.1016/j.cma.2018.04.021)
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48. R. Poya, **A.J. Gil**, R. Ortigosa, R. Sevilla, J. Bonet and W. Wall, “A curvilinear high order finite element framework for electromechanics: from linearised electro-elasticity to massively deformable dielectric elastomers”, *Computer Methods in Applied Mechanics and Engineering*, Volume 329, 2018, pages 75-117, doi: [10.1016/j.cma.2017.09.020](https://doi.org/10.1016/j.cma.2017.09.020)
47. L. Yang, **A.J. Gil**, A. Arranz Carreño and J. Bonet, “Unified one-fluid formulation for incompressible flexible solids and multiphase flows: Application to hydrodynamics using the Immersed Structural Potential Method (ISPM)”, *International Journal for Numerical Methods in Fluids*, Volume 86, 2018, pages 78-106, doi: [10.1002/fld.4408](https://doi.org/10.1002/fld.4408)

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46. S. Bagwell, P.D. Ledger, **A.J. Gil**, M. Mallett and M. Kruij, “A linearised hp-Finite Element framework for acousto-magneto-mechanical coupling in axisymmetric MRI scanners”, *International Journal for Numerical Methods in Engineering*, Volume 112, Issue 10, 2017 pages 1323–1352, doi: [10.1002/nme.5559](https://doi.org/10.1002/nme.5559)
45. R. Poya, **A.J. Gil** and R. Ortigosa, “A high performance data parallel tensor contraction framework: Application to coupled electro-mechanics”, *Computer Physics Communications*, Volume 216, 2017, pages 35-52, doi: [10.1016/j.cpc.2017.02.016](https://doi.org/10.1016/j.cpc.2017.02.016)
44. C.H. Lee, **A.J. Gil**, O. I. Ibrahim, J. Bonet and S. Kulasegaram, “A variationally consistent Streamline Upwind Petrov Galerkin Smooth Particle Hydrodynamics algorithm for large strain solid dynamics”, *Computer Methods in Applied Mechanics and Engineering*, Volume 318, 2017, pages 514-536, doi: [10.1016/j.cma.2017.02.002](https://doi.org/10.1016/j.cma.2017.02.002)
43. R. Ortigosa and **A.J. Gil**, “A computational framework for incompressible electromechanics based on convex multi-variable strain energies for geometrically exact shell theory”, *Computer Methods in Applied Mechanics and Engineering*, Volume 317, 2017, pages 792-816, doi: [10.1016/j.cma.2016.12.034](https://doi.org/10.1016/j.cma.2016.12.034)
42. C. Hesch, **A.J. Gil**, R. Ortigosa, M. Dittmann, C. Bilgen, P. Betsch, M. Franke, A. Janz and K. Weinberg, “A framework for polyconvex large strain phase-field methods to fracture”, *Computer Methods in Applied Mechanics and Engineering*, Volume 317, 2017, pages 649-683, doi: [10.1016/j.cma.2016.12.035](https://doi.org/10.1016/j.cma.2016.12.035)
41. R. Sevilla, **A.J. Gil** and M. Weberstadt, “A high-order stabilised finite element formulation for the Euler equations on deformable domains”, *Computers and Structures*, Volume 181, 2017, pages 89-102, doi: [10.1016/j.compstruc.2016.11.019](https://doi.org/10.1016/j.compstruc.2016.11.019)
40. J. Haider, C. H. Lee, **A.J. Gil** and J. Bonet, “A first order hyperbolic framework for large strain computational solid dynamics: An upwind cell centred Total Lagrangian scheme”, *International Journal for Numerical Methods in Engineering*, Volume 109, 2017, pages 407-456, doi: [10.1002/nme.5293](https://doi.org/10.1002/nme.5293)

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39. C.H. Lee, **A.J. Gil**, G. Greto, S. Kulasegaram and J. Bonet, “A new Jameson-Schmidt-Turkel Smooth Particle Hydrodynamics algorithm for large strain explicit fast dynamics”, *Computer Methods in Applied Mechanics and Engineering*, Volume 311, 2016, pages 71-111, doi: [10.1016/j.cma.2016.07.033](https://doi.org/10.1016/j.cma.2016.07.033)
38. R. Ortigosa, **A.J. Gil** and C.H. Lee, “A computational framework for large strain nearly and truly incompressible electromechanics based on convex multi-variable strain energies”, *Computer Methods in Applied Mechanics and Engineering*, Volume 310, 2016, pages 297-334, doi: [10.1016/j.cma.2016.06.025](https://doi.org/10.1016/j.cma.2016.06.025)
37. R. Ortigosa and **A.J. Gil**, “A new framework for large strain electromechanics based on convex multi-variable strain energies: Conservation laws, hyperbolicity and extension to electro-magneto-mechanics”, *Computer Methods in Applied Mechanics and Engineering*, Volume 309, 2016, pages 202-242, doi: [10.1016/j.cma.2016.05.019](https://doi.org/10.1016/j.cma.2016.05.019)
36. R. Poya, R. Sevilla and **A.J. Gil**, “A unified approach for a posteriori high-order curved mesh generation using solid mechanics”, *Computational Mechanics*, Volume 58, Issue 3, 2016, pages 457-490, doi: [10.1007/s00466-016-1302-2](https://doi.org/10.1007/s00466-016-1302-2).
35. J. Bonet, **A.J. Gil** and R. Ortigosa, “On a tensor cross product based formulation of large strain solid mechanics”, *International Journal of Solids and Structures*, Volume 84, 2016, pages 49-63, doi: [10.1016/j.ijsolstr.2015.12.030](https://doi.org/10.1016/j.ijsolstr.2015.12.030)

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33. **A.J. Gil** and R. Ortigosa, “A new framework for large strain electromechanics based on convex multi-variable strain energies: variational formulation and material characterisation”, *Computer Methods in Applied Mechanics and Engineering*, Volume 302, 2016, pages 293-328, doi: [10.1016/j.cma.2015.11.036](https://doi.org/10.1016/j.cma.2015.11.036)
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30. D. Jin, P.D. Ledger and **A.J. Gil**, “hp-Finite Element solution of coupled stationary Magnetohydrodynamics problems including magnetostrictive effects”, *Computers and Structures*, Volume 164, 2016, 161-180, doi: [10.1016/j.compstruc.2015.11.008](https://doi.org/10.1016/j.compstruc.2015.11.008)
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21. D. Jin, P.D. Ledger and **A.J. Gil**, “An hp-fem framework for the simulation of electrostrictive and magnetostrictive materials”, *Computers and Structures*, Volume 133, 2014, pages 131-148, doi: [10.1016/j.compstruc.2013.10.009](https://doi.org/10.1016/j.compstruc.2013.10.009).
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13. F. Scarpa, S. Adhikari, **A.J. Gil** and C. Remillat, “The bending of single layer graphene sheets: lattice versus continuum approach”, *Nanotechnology*, Volume 21, Issue 12, 9pp, 2010, doi: [10.1088/0957-4484/21/12/125702](https://doi.org/10.1088/0957-4484/21/12/125702).
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10. J.L. Curiel Sosa and **A.J. Gil**, “Analysis of a continuum-based beam element in the framework of explicit FEM”, *Finite Elements in Analysis and Design*, Volume 45, Issues 8-9, 2009, pages 583-591, doi: [10.1016/j.finel.2009.03.003](https://doi.org/10.1016/j.finel.2009.03.003).

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5. Z. Zhang, **A.J. Gil**, O. Hassan and K. Morgan, “The simulation of 3D unsteady incompressible flows with moving boundaries on unstructured meshes”, *Computers and Fluids*, Volume 37, Issue 5, 2007, pages 620-631, doi: [10.1016/j.compfluid.2007.07.013](https://doi.org/10.1016/j.compfluid.2007.07.013).

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## V. Conference publications.

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12. C. Wood, **A.J. Gil**, O. Hassan, K. Morgan, J. Bonet, “A 3D unsteady incompressible flow solver and its application in fluid structure interaction problems”, In Proceedings of the 8<sup>th</sup> World Congress on Computational Mechanics and 5<sup>th</sup> European Congress on Computational Mechanics 2008, Venice, 30 June to 4 July, 2008.
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4. **A.J. Gil** and J. Bonet, “Structural analysis of cable and strut supported prestressed membranes”, In Proceedings of the UK Association of Computational Mechanics in Engineering (ACME) conference, Cardiff, 5-6 April 2004. This paper was awarded the prize of Best Post-graduate Research Paper of the Conference.

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3. R.D. Wood, R.V. Curtis, J. Bonet, R. Said, **A.J. Gil**, D. Garriga Majo, X. Li, “Computer simulation of superplastic forming in restorative dentistry”. In Materials Science Forum, Vols. 447-448, pages 131-138, Oxford (UK), 28-30 July 2003.
2. **A.J. Gil**, “A comparison of prestressed membranes Finite Element Analysis with membrane and cable elements”, In Proceedings of the International Conference on Textile Composites and Inflatable Structures, Barcelona (Spain), 30 June to 3 July, 2003.

1. **A.J. Gil**, “Finite Element Analysis of prestressed hyperelastic Saint Venant-Kirchhoff membranes under large deformations”. In Proceedings of the International Conference on Textile Composites and Inflatable Structures, Barcelona (Spain), 30 June to 3 July, 2003.

## V. Posters.

### 2014

5. D. Jin, P. D. Ledger and **A. J. Gil**, “Coupled magneto-mechanical-fluid simulation using hp-finite elements”, poster presented at the SIAM UK Chapter Day (Cardiff), January 2014.

### 2013

4. M. Aguirre and **A. J. Gil**, “Towards the next generation of fast dynamics software”, poster presented at SET for Britain 2013, House of Commons, London, March 2013.
3. D. Jin, P. D. Ledger and **A. J. Gil**, “Coupled magneto-mechanical-fluid simulation using hp-Finite Elements”, poster presented at the SIAM UK annual meeting (Reading) and the SIAM Chapter Day (Cardiff), January 2013.

### 2012

2. **A. J. Gil**, R. Pullin, R. van Loon, L. Li, S. Neill, J. Geert Hiddink, P.D. Ledger, J. Bonet, A. Arranz Carreño, C. Wood, R. Ortigosa, “New Sustainable Energy Harvesters for Marine Environments”, poster presented at the meeting of the second Welsh Crucible. October 2012.
1. A. Arranz Carreño, **A. J. Gil**, J. Bonet and O. Hassan, ”The Immersed Structural Potential method (ISPM) for biomedical fluid-structure interaction problems”. poster presented at the Biomedical Modelling and Translational Research (EPSRC) workshop. Imperial College, London. 16-17 April 2012.