

# Mariano Vázquez

## List of Publications by Year in descending order

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86  
papers

2,152  
citations

236925

25  
h-index

265206

42  
g-index

95  
all docs

95  
docs citations

95  
times ranked

1988  
citing authors

| #  | ARTICLE   | IF   | CITATIONS |
|----|---|------|-----------|
| 1  | The characteristic-based-split procedure: an efficient and accurate algorithm for fluid problems. <i>International Journal for Numerical Methods in Fluids</i> , 1999, 31, 359-392.                                       | 1.6  | 167       |
| 2  | Alya: Multiphysics engineering simulation toward exascale. <i>Journal of Computational Science</i> , 2016, 14, 15-27.   | 2.9  | 144       |
| 3  | A parallel finite-element method for three-dimensional controlled-source electromagnetic forward modelling. <i>Geophysical Journal International</i> , 2013, 193, 678-693.  | 2.4  | 126       |
| 4  | A general algorithm for compressible and incompressible flowâ€”Part II. tests on the explicit form. <i>International Journal for Numerical Methods in Fluids</i> , 1995, 20, 887-913.                                     | 1.6  | 96        |
| 5  | Fully coupled fluidâ€”electroâ€”mechanical model of the human heart for supercomputers. <i>International Journal for Numerical Methods in Biomedical Engineering</i> , 2018, 34, e3140.                                   | 2.1  | 92        |
| 6  | Large-scale CFD simulations of the transitional and turbulent regime for the large human airways during rapid inhalation. <i>Computers in Biology and Medicine</i> , 2016, 69, 166-180.                                   | 7.0  | 89        |
| 7  | Coupled electromechanical model of the heart: Parallel finite element formulation. <i>International Journal for Numerical Methods in Biomedical Engineering</i> , 2012, 28, 72-86.  | 2.1  | 80        |
| 8  | Analysis of hemodynamics and wall mechanics at sites of cerebral aneurysm rupture. <i>Journal of NeuroInterventional Surgery</i> , 2015, 7, 530-536.  | 3.3  | 79        |
| 9  | A massively parallel fractional step solver for incompressible flows. <i>Journal of Computational Physics</i> , 2009, 228, 6316-6332.   | 3.8  | 78        |
| 10 | In-silico human electro-mechanical ventricular modelling and simulation for drug-induced pro-arrhythmia and inotropic risk assessment. <i>Progress in Biophysics and Molecular Biology</i> , 2021, 159, 58-74.            | 2.9  | 55        |
| 11 | Nasal sprayed particle deposition in a human nasal cavity under different inhalation conditions. <i>PLoS ONE</i> , 2019, 14, e0221330.  | 2.5  | 52        |
| 12 | Extension of fractional step techniques for incompressible flows: The preconditioned Orthomin(1) for the pressure Schur complement. <i>Computers and Fluids</i> , 2011, 44, 297-313.                                      | 2.5  | 48        |
| 13 | A Review of Element-Based Galerkin Methods for Numerical Weather Prediction: Finite Elements, Spectral Elements, and Discontinuous Galerkin. <i>Archives of Computational Methods in Engineering</i> , 2016, 23, 673-722. | 10.2 | 44        |
| 14 | Shock capturing viscosities for the general fluid mechanics algorithm. , 1998, 28, 1325-1353.   |      | 42        |
| 15 | Subject-variability effects on micron particle deposition in human nasal cavities. <i>Journal of Aerosol Science</i> , 2018, 115, 12-28.  | 3.8  | 42        |
| 16 | Complex Congenital Heart Disease Associated With Disordered Myocardial Architecture in a Midtrimester Human Fetus. <i>Circulation: Cardiovascular Imaging</i> , 2018, 11, e007753.  | 2.6  | 40        |
| 17 | Parallel uniform mesh multiplication applied to a Navierâ€”Stokes solver. <i>Computers and Fluids</i> , 2013, 80, 142-151.  | 2.5  | 38        |
| 18 | An XFEM/CZM implementation for massively parallel simulations of composites fracture. <i>Composite Structures</i> , 2015, 125, 542-557.   | 5.8  | 36        |

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|----|---|------|-----------|
| 19 | Coupled analysis of unsteady aerodynamics and vehicle motion of a road vehicle in windy conditions. <i>Computers and Fluids</i> , 2013, 80, 1-9.  | 2.5  | 35        |
| 20 | Parallel mesh partitioning based on space filling curves. <i>Computers and Fluids</i> , 2018, 173, 264-272.   | 2.5  | 34        |
| 21 | A massively parallel computational electrophysiology model of the heart. <i>International Journal for Numerical Methods in Biomedical Engineering</i> , 2011, 27, 1911-1929.  | 2.1  | 32        |
| 22 | Turbulent combustion modelling of a confined premixed jet flame including heat loss effects using tabulated chemistry. <i>Applied Energy</i> , 2015, 156, 804-815.  | 10.1 | 29        |
| 23 | Left Ventricular Trabeculations Decrease the Wall Shear Stress and Increase the Intra-Ventricular Pressure Drop in CFD Simulations. <i>Frontiers in Physiology</i> , 2018, 9, 458.  | 2.8  | 29        |
| 24 | Alya: Computational Solid Mechanics for Supercomputers. <i>Archives of Computational Methods in Engineering</i> , 2015, 22, 557-576.  | 10.2 | 28        |
| 25 | A 3D transversally isotropic constitutive model for advanced composites implemented in a high performance computing code. <i>European Journal of Mechanics, A/Solids</i> , 2018, 71, 278-291.   | 3.7  | 28        |
| 26 | Variational multiscale stabilization of high-order spectral elements for the advection-diffusion equation. <i>Journal of Computational Physics</i> , 2012, 231, 7187-7213.  | 3.8  | 27        |
| 27 | DEISA Distributed European Infrastructure for Supercomputing Applications. <i>Journal of Grid Computing</i> , 2011, 9, 259-277.   | 3.9  | 23        |
| 28 | A variational multiscale stabilized finite element method for the solution of the Euler equations of nonhydrostatic stratified flows. <i>Journal of Computational Physics</i> , 2013, 236, 380-407.   | 3.8  | 23        |
| 29 | Domain Decomposition Methods for Domain Composition Purpose: Chimera, Overset, Gluing and Sliding Mesh Methods. <i>Archives of Computational Methods in Engineering</i> , 2017, 24, 1033-1070.  | 10.2 | 23        |
| 30 | Multilevel optimization of a supersonic aircraft. <i>Finite Elements in Analysis and Design</i> , 2004, 40, 2101-2124.  | 3.2  | 22        |
| 31 | Fluid-structure interaction simulations outperform computational fluid dynamics in the description of thoracic aorta haemodynamics and in the differentiation of progressive dilation in Marfan syndrome patients. <i>Royal Society Open Science</i> , 2020, 7, 191752. | 2.4  | 21        |
| 32 | Dynamic load balance applied to particle transport in fluids. <i>International Journal of Computational Fluid Dynamics</i> , 2016, 30, 408-418.   | 1.2  | 20        |
| 33 | A surface remeshing approach. <i>International Journal for Numerical Methods in Engineering</i> , 2011, 85, 1475-1498.  | 2.8  | 19        |
| 34 | Heat loss prediction of a confined premixed jet flame using a conjugate heat transfer approach. <i>International Journal of Heat and Mass Transfer</i> , 2017, 107, 882-894.  | 4.8  | 18        |
| 35 | Simulations of moist convection by a variational multiscale stabilized finite element method. <i>Journal of Computational Physics</i> , 2013, 252, 195-218.   | 3.8  | 17        |
| 36 | A Chimera method for the incompressible Navier-Stokes equations. <i>International Journal for Numerical Methods in Fluids</i> , 2014, 75, 155-183.  | 1.6  | 16        |

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|----|--|-----|-----------|
| 37 | The Effect of Partial Premixing and Heat Loss on the Reacting Flow Field Prediction of a Swirl Stabilized Gas Turbine Model Combustor. <i>Flow, Turbulence and Combustion</i> , 2018, 100, 503-534.  | 2.6 | 16        |
| 38 | On the chordae structure and dynamic behaviour of the mitral valve. <i>IMA Journal of Applied Mathematics</i> , 2018, 83, 1066-1091.   | 1.6 | 16        |
| 39 | A variational multiscale model for the advection–diffusion–reaction equation. <i>Communications in Numerical Methods in Engineering</i> , 2009, 25, 787-809.   | 1.3 | 15        |
| 40 | Human biventricular electromechanical simulations on the progression of electrocardiographic and mechanical abnormalities in post-myocardial infarction. <i>Europace</i> , 2021, 23, i143-i152.  | 1.7 | 15        |
| 41 | A numerical model for temporal variations during explosive central vent eruptions. <i>Journal of Geophysical Research</i> , 1998, 103, 20883-20899.  | 3.3 | 14        |
| 42 | Some useful strategies for unstructured edge-based solvers on shared memory machines. <i>International Journal for Numerical Methods in Engineering</i> , 2011, 85, 537-561.   | 2.8 | 14        |
| 43 | Parallel embedded boundary methods for fluid and rigid-body interaction. <i>Computer Methods in Applied Mechanics and Engineering</i> , 2015, 290, 387-419.  | 6.6 | 14        |
| 44 | Remoras pick where they stick on blue whales. <i>Journal of Experimental Biology</i> , 2020, 223, .  | 1.7 | 14        |
| 45 | A parallel coupling strategy for the Chimera and domain decomposition methods in computational mechanics. <i>Computers and Fluids</i> , 2013, 80, 128-141.   | 2.5 | 12        |
| 46 | Three-dimensional cardiac fibre disorganization as a novel parameter for ventricular arrhythmia stratification after myocardial infarction. <i>Europace</i> , 2019, 21, 822-832.   | 1.7 | 12        |
| 47 | Extension of the parallel Sparse Matrix Vector Product (SpMV) for the implicit coupling of PDEs on non-matching meshes. <i>Computers and Fluids</i> , 2018, 173, 216-225.  | 2.5 | 11        |
| 48 | The robustness issue on multigrid schemes applied to the Navier–Stokes equations for laminar and turbulent, incompressible and compressible flows. <i>International Journal for Numerical Methods in Fluids</i> , 2004, 45, 555-579.   | 1.6 | 10        |
| 49 | MPI+X: task-based parallelisation and dynamic load balance of finite element assembly. <i>International Journal of Computational Fluid Dynamics</i> , 2019, 33, 115-136.   | 1.2 | 10        |
| 50 | Modeling the damped dynamic behavior of a flexible pendulum. <i>Journal of Strain Analysis for Engineering Design</i> , 2019, 54, 116-129.   | 1.8 | 10        |
| 51 | HPC compact quasi-Newton algorithm for interface problems. <i>Journal of Fluids and Structures</i> , 2020, 96, 103009.   | 3.4 | 10        |
| 52 | Dynamic analysis using finite elements to calculate the critical wear section of the contact wire in suburban railway overhead conductor rails. <i>Proceedings of the Institution of Mechanical Engineers, Part F: Journal of Rail and Rapid Transit</i> , 2008, 222, 145-157. | 2.0 | 9         |
| 53 | Heat Transfer Effects on a Fully Premixed Methane Impinging Flame. <i>Flow, Turbulence and Combustion</i> , 2016, 97, 339-361.   | 2.6 | 9         |
| 54 | Dynamic Mode Decomposition Analysis of High-Fidelity CFD Simulations of the Sinus Ventilation. <i>Flow, Turbulence and Combustion</i> , 2020, 105, 699-713.  | 2.6 | 9         |

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|----|--|-----|-----------|
| 55 | Brads on the Poincaré section: A laser example. <i>Physical Review E</i> , 1996, 54, 3185-3195.  | 2.1 | 8         |
| 56 | Evaluating the roles of detailed endocardial structures on right ventricular haemodynamics by means of CFD simulations. <i>International Journal for Numerical Methods in Biomedical Engineering</i> , 2018, 34, e3115.              | 2.1 | 8         |
| 57 | Implications of bipolar voltage mapping and magnetic resonance imaging resolution in biventricular scar characterization after myocardial infarction. <i>Europace</i> , 2019, 21, 163-174.   | 1.7 | 8         |
| 58 | Automatic Differentiation for Optimum Design, Applied to Sonic Boom Reduction. <i>Lecture Notes in Computer Science</i> , 2003, , 85-94.   | 1.3 | 8         |
| 59 | Turbulent Combustion Modelling of a Confined Premixed Methane/Air Jet Flame Using Tabulated Chemistry. <i>Energy Procedia</i> , 2015, 66, 313-316.   | 1.8 | 7         |
| 60 | Design and execution of a verification, validation, and uncertainty quantification plan for a numerical model of left ventricular flow after LVAD implantation. <i>PLoS Computational Biology</i> , 2022, 18, e1010141.              | 3.2 | 7         |
| 61 | A fractional-step finite-element method for the Navier–Stokes equations applied to magma-chamber withdrawal. <i>Computers and Geosciences</i> , 1999, 25, 263-275.   | 4.2 | 6         |
| 62 | Recent ship hydrodynamics developments in the parallel two-fluid flow solver Alya. <i>Computers and Fluids</i> , 2013, 80, 168-177.  | 2.5 | 6         |
| 63 | High-Performance Computing: Dos and Don'ts. , 0, , .   |     | 6         |
| 64 | Computing the Casimir energy using the point-matching method. <i>Physical Review D</i> , 2009, 80, .   | 4.7 | 5         |
| 65 | Total energy conservation in ALE schemes for compressible flows. <i>European Journal of Computational Mechanics</i> , 2010, 19, 337-363.   | 0.6 | 5         |
| 66 | Local preconditioning and variational multiscale stabilization for Euler compressible steady flow. <i>Computer Methods in Applied Mechanics and Engineering</i> , 2016, 305, 468-500.  | 6.6 | 5         |
| 67 | A methodology for the shape optimization of flexible wings. <i>Engineering Computations</i> , 2006, 23, 344-367.   | 1.4 | 4         |
| 68 | An Unstructured CFD Approach for Numerical Weather Prediction. , 2010, , .   |     | 4         |
| 69 | Fourier stability analysis and local Courant number of the preconditioned variational multiscale stabilization (P-VMS) for Euler compressible flow. <i>Computer Methods in Applied Mechanics and Engineering</i> , 2016, 301, 28-51. | 6.6 | 4         |
| 70 | What a Difference in Biomechanics Cardiac Fiber Makes. <i>Lecture Notes in Computer Science</i> , 2013, , 253-260.   | 1.3 | 4         |
| 71 | Study protocol: MyoFit46—the cardiac sub-study of the MRC National Survey of Health and Development. <i>BMC Cardiovascular Disorders</i> , 2022, 22, 140.  | 1.7 | 4         |
| 72 | A gluing method for non-matching meshes. <i>Computers and Fluids</i> , 2015, 110, 159-168.   | 2.5 | 3         |

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|----|---|-----|-----------|
| 73 | Parallel Aspects of Fluid-structure Interaction. Procedia Engineering, 2013, 61, 117-121.   | 1.2 | 2         |
| 74 | ParaView + Alya + D8tree: Integrating High Performance Computing and High Performance Data Analytics. Procedia Computer Science, 2017, 108, 465-474.                            | 2.0 | 2         |
| 75 | Calculs de sensibilité par différentiation pour l'aérodynamique. ESAIM: Proceedings and Surveys, 2008, 22, 181-189.   | 0.4 | 1         |
| 76 | Application of a Galerkin Finite Element Scheme to Atmospheric Buoyant and Gravity Driven Flows. , 2010, , .  |     | 1         |
| 77 | Two Fluids Level Set: High Performance Simulation and Post Processing. , 2012, , .  |     | 1         |
| 78 | Cardiac computational modelling. Revista Espanola De Cardiologia (English Ed ), 2021, 74, 65-71.  | 0.6 | 1         |
| 79 | Alya Multiphysics Simulations on Intel® Xeon Phi Accelerators. Communications in Computer and Information Science, 2014, , 248-254.   | 0.5 | 1         |
| 80 | Simulation of Magnetic Fluid Applied to Plastic Sorting. The Open Waste Management Journal, 2010, 3, 127-138.   | 2.8 | 1         |
| 81 | Fully-Coupled Electromechanical Simulations of the LV Dog Anatomy Using HPC: Model Testing and Verification. Lecture Notes in Computer Science, 2015, , 114-122.                | 1.3 | 1         |
| 82 | Extensions of a Surface Remeshing Approach. , 2011, , .   |     | 0         |
| 83 | MIOCARDIA. , 2011, , .  |     | 0         |
| 84 | A Gluing Method for Non-matching Meshes. Procedia Engineering, 2013, 61, 258-263.   | 1.2 | 0         |
| 85 | Effects of Fibre Orientation on Electrocardiographic and Mechanical Functions in a Computational Human Biventricular Model. Lecture Notes in Computer Science, 2021, , 351-361. | 1.3 | 0         |
| 86 | Hybrid MPI-OpenMP performance in massively parallel computational fluid dynamics. Lecture Notes in Computational Science and Engineering, 2010, , 293-297.                      | 0.3 | 0         |