

List of Publications - Josef Kiendl

Papers in peer-reviewed international journals

- 76. S. Milovanović, **Josef Kiendl**, Y. Vetyukov; *Isogeometric approximation of shear strain for rod contact*; Acta Mechanica, Volume 237, Issue 6 (2026)
<https://doi.org/10.1007/s00707-026-04782-7>
- 75. T. Schiereck, T. Weithoff, L. Gallardo Zamora, S. Degener, **J. Kiendl**, F.-C. von Runds-
tedt; *A biomechanical study to assess orthotopic bladder substitutes in robot-assisted radical
cystectomy*; World Journal of Urology, Volume 44, 393 (2026)
<https://doi.org/10.1007/s00345-026-06507-w>
- 74. D. Zhang, **J. Kiendl** *A variationally consistent model for wrinkling in hyperelastic mem-
branes using spectral decomposition of the stress tensor*; Computer Methods in Applied
Mechanics and Engineering, Volume 459, 19083, (2026)
<https://doi.org/10.1016/j.cma.2026.11908>
- 73. T. Toprak, M. Loibl, G.H. Teixeira, I. Shishkina, C. Miao, **J. Kiendl**, B. Marussig, F.
Kummer; *Employing Continuous Integration inspired workflows for benchmarking of scien-
tific software — A use case on numerical cut element quadrature*; Advances in Engineering
Software, 104087 (2026)
<https://doi.org/10.1016/j.advengsoft.2025.104087>
- 72. D. Ignesti, G. Ferri, A. Reali, F. Auricchio, **J. Kiendl**, E. Marino; *A novel finite-strain mixed
isogeometric collocation formulation for hyperelastic geometrically exact beams*; Computer
Methods in Applied Mechanics and Engineering, 118641 (2025)
<https://doi.org/10.1016/j.cma.2025.118641>
- 71. L. Greco, **J. Kiendl**, M. Negri, A. Patton, A. Reali; *Fourth-order isogeometric phase-field
modeling of dynamic brittle fracture: Numerical study and comparison with second-order
model*; Computer Methods in Applied Mechanics and Engineering, 118513 (2026)
<https://doi.org/10.1016/j.cma.2025.118513>
- 70. S. Heiserer, N. Galfe, M. Loibl, M. Wagner, O. Hartwig, S. Schlosser, S. Boche, W. Thornley,
N. Clark, K. Lee, T. Stimpel-Lindner, C. Ó Coileáin, **J. Kiendl**, S. J. Haigh, G. J. de Coster,
G.S. Duesberg, P. Seifert; *Impact of Strain in Free-Standing PtSe₂ in Scalable 2D MEMS*;
Advanced Materials, Volume 37, Issue 43, e12564 (2025)
<http://doi.org/10.1002/adma.202412564>
- 69. L. Leonetti, A. Patton, **J. Kiendl**; *Locking mitigation in geometrically nonlinear solid beams
through isogeometric analysis and a generalized constitutive approach*; Computer Methods
in Applied Mechanics and Engineering, 118149 (2025)
<https://doi.org/10.1016/j.cma.2025.118149>
- 68. D. Zhang, **J. Kiendl**; *A variationally consistent membrane wrinkling model based on spec-
tral decomposition of the strain and stress tensors*; Journal of Mechanics and Physics of
Solids, 106331 (2025);
<https://doi.org/10.1016/j.jmps.2025.106331>

67. A. Patton, L. Leonetti **J. Kiendl**; *An isogeometric assumed natural strain method to alleviate locking in solid beams*; Computer Methods in Applied Mechanics and Engineering 118024 (2025);
<https://doi.org/10.1016/j.cma.2025.118024>
66. S. Seibel, **J. Kiendl**; *A finite element approach for modelling the fracture behaviour of unidirectional FFF-printed parts*; Progress in Additive Manufacturing, (2025);
<https://doi.org/10.1007/s40964-025-01021-8>
65. M. Lukhi, C. Mittermeier, **J. Kiendl**; *Multi-physics simulation of a material extrusion-based additive manufacturing process: towards understanding stress formation in the printed strand*; Progress in Additive Manufacturing, (2025);
<https://doi.org/10.1007/s40964-025-01012-9>
64. D. Zhang, **J. Kiendl**; *A variationally consistent membrane wrinkling model based on spectral decomposition of the strain tensor*; Computer Methods in Applied Mechanics and Engineering, 117386 (2024);
<https://doi.org/10.1016/j.cma.2024.117386>
63. M. Kühn-Kauffeldt, M. Kühn, C. Mittermeier, **J. Kiendl**; *Fused filament fabrication of polyetheretherketone in vacuum: the influence of high vacuum on layer adhesion in z-orientation*; Progress in Additive Manufacturing, 5205-5215 (2025)
<https://doi.org/10.1007/s40964-024-00897-2>
62. G. Ferri, **J. Kiendl**, A. Reali, E. Marino; *A fully explicit isogeometric collocation formulation for the dynamics of geometrically exact beams*; Computer Methods in Applied Mechanics and Engineering, 117283 (2024);
<https://doi.org/10.1016/j.cma.2024.117283>
61. M. Torre, S. Morganti, A. Nitti, M. D. de Tullio, **J. Kiendl**, F.S. Pasqualini, A. Reali; *An efficient active-stress electromechanical isogeometric shell model for muscular thin film simulations*; Mechanics of Materials, 105046 (2024);
<https://doi.org/10.1016/j.mechmat.2024.105046>
60. D. Magisano, A. Corrado, L. Leonetti, **J. Kiendl**, G. Garcea; *Large deformation Kirchhoff–Love shell hierarchically enriched with warping: Isogeometric formulation and modeling of alternating stiff/soft layups*; Computer Methods in Applied Mechanics and Engineering, 116556 (2024);
<https://doi.org/10.1016/j.cma.2023.116556>
59. T.X. Duong, L. Leonetti, **J. Kiendl**; *A variationally consistent contact formulation based on a mixed interpolation point method and isogeometric discretization*; Computer Methods in Applied Mechanics and Engineering, 116361 (2023);
<https://doi.org/10.1016/j.cma.2023.116361>
58. A. Nitti, M. Torre, A. Reali, **J. Kiendl**, M. D. de Tullio; *A multiphysics model for fluid-structure-electrophysiology interaction in rowing propulsion*; Applied Mathematical Modelling; 124:414-444 (2023);
<https://doi.org/10.1016/j.apm.2023.08.003>
57. L. Leonetti, **J. Kiendl**; *A mixed integration point (MIP) formulation for hyperelastic Kirchhoff–Love shells for nonlinear static and dynamic analysis*; Computer Methods in Applied

- Mechanics and Engineering; 416:116325 (2023);
<https://doi.org/10.1016/j.cma.2023.116325>
56. M. Loibl, L. Leonetti, A. Reali, **J. Kiendl**; *Patch-wise quadrature of trimmed surfaces in Isogeometric Analysis*; Computer Methods in Applied Mechanics and Engineering; 415:116279 (2023);
<https://doi.org/10.1016/j.cma.2023.116279>
 55. A. Farahat, H. Verhelst, **J. Kiendl**, M. Kapl; *Isogeometric analysis for multi-patch structured Kirchhoff-Loveshells*; Computer Methods in Applied Mechanics and Engineering, 411:116060 (2023);
<https://doi.org/10.1016/j.cma.2023.116060>
 54. N. Ramos, C. Mittermeier, **J. Kiendl**; *Efficient simulation of the heat transfer in fused filament fabrication*; Journal of Manufacturing Processes, 94:550-563 (2023);
<https://doi.org/10.1016/j.jmapro.2023.03.0300>
 53. S. Eisenträger, **J. Kiendl**, G. Michaloudis, R. Duy, Y. Vetyukov; *Stability analysis of plates using cut Bogner-Fox-Schmit elements*; Computers and Structures, 270:106854 (2022);
<https://doi.org/10.1016/j.compstruc.2022.106854>
 52. D. Proserpio, **J. Kiendl**; *Penalty coupling of trimmed isogeometric Kirchhoff-Love shell patches*; Journal of Mechanics, 38:156-165 (2022);
<https://doi.org/10.1093/jom/ufac008>
 51. N. Ramos, C. Mittermeier, **J. Kiendl**; *Experimental and numerical investigations on heat transfer in fused filament fabrication 3D-printed specimens*; International Journal of Advanced Manufacturing Technology, 118:1367-1381 (2022),
<https://doi.org/10.1007/s00170-021-07760-6>
 50. A. del Toro Llorens, **J. Kiendl**; *An isogeometric finite element-boundary element approach for the vibration analysis of submerged thin-walled structures*; Computers and Structures, 256:106636 (2021);
<https://doi.org/10.1016/j.compstruc.2021.106636>
 49. L. Coradello, **J. Kiendl**, A. Buffa; *Coupling of non-conforming trimmed isogeometric Kirchhoff-Love shells via a projected super-penalty approach*; Computer Methods in Applied Mechanics and Engineering, 387:114187 (2021);
<https://doi.org/10.1016/j.cma.2021.114187>
 48. D. Proserpio, M. Ambati, L. De Lorenzis, **J. Kiendl**; *Phase-field simulation of ductile fracture in shell structures*; Computer Methods in Applied Mechanics and Engineering, 385:114019 (2021);
<https://doi.org/10.1016/j.cma.2021.114019>
 47. A. Özen, D. Auhl, C. Völlmecke, **J. Kiendl**, B. E. Abali; *Optimization of manufacturing parameters and tensile specimen geometry for fused deposition modeling (FDM) 3-D printed PETG*; Materials, 14(10):2556 (2021);
<https://doi.org/10.3390/ma14102556>
 46. A. Patton, P. Antolin, **J. Kiendl**, A. Reali; *Efficient equilibrium-based stress recovery for isogeometric laminated curved structures*; Composite Structures, 272:113975 (2021);
<https://doi.org/10.1016/j.compstruct.2021.113975>

45. A. Nitti, **J. Kiendl**, A. Gizzi, A. Reali, M. de Tullio; *A curvilinear isogeometric framework for the electromechanical activation of thin muscular tissues*; Computer Methods in Applied Mechanics and Engineering, 382:113877 (2021);
<https://doi.org/10.1016/j.cma.2021.113877>
44. A. Patton, P. Antolin, J.-E. Dufour, **J. Kiendl**, A. Reali; *Accurate equilibrium-based interlaminar stress recovery for isogeometric laminated composite Kirchhoff plates*; Composite Structures, 256:112976 (2021);
<https://doi.org/10.1016/j.compstruct.2020.112976>
43. H. Do, Y. Y. Tan, N. Ramos, **J. Kiendl**, O. Weeger; *Nonlinear isogeometric multiscale simulation for design and fabrication of functionally graded knitted textiles*; Composites Part B: Engineering, 202:108416 (2020);
<https://doi.org/10.1016/j.compositesb.2020.108416>
42. L. Leonetti, F. S. Liguori, D. Magisano, **J. Kiendl**, A. Reali, G. Garcea; *A robust penalty coupling of non-matching isogeometric Kirchhoff-Love shell patches in large deformations*; Computer Methods in Applied Mechanics and Engineering, 371:113289 (2020);
<https://doi.org/10.1016/j.cma.2020.113289>
41. D. Proserpio, M. Ambati, L. De Lorenzis, **J. Kiendl**; *A framework for efficient isogeometric computations of phase-field brittle fracture in multipatch shell structures*; Computer Methods in Applied Mechanics and Engineering, 372:113363 (2020);
<https://doi.org/10.1016/j.cma.2020.113363>
40. L. Coradello, D. D'Angella M. Carraturo, **J. Kiendl**, S. Kollmannsberger, E. Rank, A. Reali; *Hierarchically refined isogeometric analysis of trimmed shells*; Computational Mechanics, 66:431-447 (2020);
<https://doi.org/10.1007/s00466-020-01858-6>
39. P. Antolin, **J. Kiendl**, M. Pingaro, A. Reali; *A simple and effective method based on strain projections to alleviate locking in isogeometric solid shells*; Computational Mechanics, 65(6):1621-1631 (2020);
<https://doi.org/10.1007/s00466-020-01837-x>
38. A. Nitti, **J. Kiendl**, A. Reali, M. de Tullio; *An immersed-boundary/isogeometric method for fluid-structure interaction involving thin shells*; Computer Methods in Applied Mechanics and Engineering, 364:112977 (2020);
<https://doi.org/10.1016/j.cma.2020.112977>
37. **J. Kiendl**, C. Gao; *Controlling toughness and strength of FDM 3D-printed PLA components through the raster layup*; Composites Part B: Engineering, 180:107562 (2020);
<https://doi.org/10.1016/j.compositesb.2019.107562>
36. H. Casquero, D. Toshniwal, A. Li, T.J.R. Hughes, **J. Kiendl**, Y. Zhang; *Seamless integration of design and Kirchhoff-Love shell analysis using analysis-suitable unstructured T-splines*; Computer Methods in Applied Mechanics and Engineering, 360:112765 (2020);
<https://doi.org/10.1016/j.cma.2019.112765>
35. E. Marino, **J. Kiendl**, L. De Lorenzis; *Isogeometric collocation for implicit dynamics of three-dimensional beams undergoing finite motions*; Computer Methods in Applied Mechanics and Engineering, 356:548-570 (2019);
<https://doi.org/10.1016/j.cma.2019.07.0130>

34. L. Leonetti, D. Magisano, A. Madeo, G. Garcea, **J. Kiendl**, A. Reali; *A simplified Kirchhoff-Love large deformation model for elastic shells and its effective isogeometric formulation*; Computer Methods in Applied Mechanics and Engineering, 354:369-396 (2019); <https://doi.org/10.1016/j.cma.2019.05.0250>
33. V. Balobanov, **J. Kiendl**, S. Khakalo, J. Niiranen; *Kirchhoff-Love shells within strain gradient elasticity: weak and strong formulations and an H^3 -conforming isogeometric implementation*; Computer Methods in Applied Mechanics and Engineering, 344:837-857 (2019); <https://doi.org/10.1016/j.cma.2018.10.006>
32. E. Marino, **J. Kiendl**, L. De Lorenzis; *Explicit isogeometric collocation for the dynamics of three-dimensional beams undergoing finite motions*; Computer Methods in Applied Mechanics and Engineering, 343:530-549 (2019); <https://doi.org/10.1016/j.cma.2018.09.005>
31. C. Gao, **J. Kiendl**; *Short review on architected materials with topological interlocking mechanisms*; Material Design & Processing Communications, DOI:10.1002/mdp2.31 (2019); <https://doi.org/10.1002/mdp2.31>
30. A. Herrema, **J. Kiendl**, M.-C. Hsu; *A framework for isogeometric-analysis-based optimization of wind turbine blade structures*; Wind Energy, 22:153-170 (2019); <https://doi.org/10.1002/we.2276>
29. A. Herrema, E. Johnson, D. Proserpio, M.C.H. Wu, **J. Kiendl**, M.-C. Hsu; *Penalty coupling of non-matching isogeometric Kirchhoff-Love shell patches with application to composite wind turbine blades*; Computer Methods in Applied Mechanics and Engineering, 346:810-840 (2019); <https://doi.org/10.1016/j.cma.2018.08.038>
28. J. Niiranen, V. Balobanov, **J. Kiendl**, S. B. Hosseini; *Variational formulations, model comparisons and numerical methods for Euler-Bernoulli micro- and nano-beam models*; Mathematics and Mechanics of Solids, 24:312-335 (2019); <https://doi.org/10.1177/1081286517739669>
27. M. Ambati, **J. Kiendl**, L. De Lorenzis; *Isogeometric Kirchhoff-Love shell formulation for elasto-plasticity*; Computer Methods in Applied Mechanics and Engineering, 340:320-339 (2018); <https://doi.org/10.1016/j.cma.2018.05.023>
26. N.A. Nodargi, **J. Kiendl**, P. Bisegna, F. Caselli, L. De Lorenzis; *An isogeometric analysis formulation for red blood cell electro-deformation modeling*; Computer Methods in Applied Mechanics and Engineering, 338:392-411 (2018); <https://doi.org/10.1016/j.cma.2018.04.038>
25. M.C.H. Wu, R. Zakerzadeh, D. Kamensky, **J. Kiendl**, M. Sacks, M.-C. Hsu; *An anisotropic constitutive model for immersogeometric fluid-structure interaction analysis of bioprosthetic heart valves*; Journal of Biomechanics, 74:23-31 (2018); <https://doi.org/10.1016/j.jbiomech.2018.04.012>
24. **J. Kiendl**, F. Auricchio, A. Reali; *A displacement-free formulation for the Timoshenko beam problem and a corresponding isogeometric collocation approach*; Meccanica, 53(6):1403-1413 (2018); <https://doi.org/10.1007/s11012-017-0745-7>

23. **J. Kiendl**, E. Marino, L. De Lorenzis; *Isogeometric collocation for the Reissner-Mindlin shell problem*; Computer Methods in Applied Mechanics and Engineering, 325:645-665 (2017);
<https://doi.org/10.1016/j.cma.2017.07.023>
22. O. Weeger, B. Narayanan, L. De Lorenzis, **J. Kiendl**, M.L. Dunn; *An isogeometric collocation method for frictionless contact of Cosserat rods*; Computer Methods in Applied Mechanics and Engineering, 321:361-382 (2017);
<https://doi.org/10.1016/j.cma.2017.04.0140>
21. L. Heltai, **J. Kiendl**, A. DeSimone, A. Reali; *A natural framework for isogeometric fluid-structure interaction based on BEM-shell coupling*; Computer Methods in Applied Mechanics and Engineering, 316:522-546 (2017);
<https://doi.org/10.1016/j.cma.2016.08.008>
20. J. Niiranen, **J. Kiendl**, A. Niemi, A. Reali; *Isogeometric analysis for sixth-order boundary value problems of gradient-elastic Kirchhoff plates*; Computer Methods in Applied Mechanics and Engineering, 316:328-348 (2017);
<https://doi.org/10.1016/j.cma.2016.07.0080>
19. H. Casquero, L. Liu, Y. Zhang, A. Reali, **J. Kiendl**, H. Gomez; *Arbitrary-Degree T-splines for Isogeometric Analysis of Fully Nonlinear Kirchhoff-Love Shells*; Computer-Aided Design, 82:140-153 (2017);
<https://doi.org/10.1016/j.cad.2016.08.009>
18. **J. Kiendl**, M. Ambati, L. De Lorenzis, H. Gomez, A. Reali; *Phase-field description of brittle fracture in plates and shells*; Computer Methods in Applied Mechanics and Engineering, 312:374-394 (2016);
<https://doi.org/10.1016/j.cma.2016.09.01>
17. F. Auricchio, L. Beirão da Veiga, **J. Kiendl**, C. Lovadina, A. Reali; *Isogeometric collocation mixed methods for rods*; Discrete and Continuous Dynamical Systems - Series S, 9:33-42 (2016);
<https://doi.org/10.3934/dcdss.2016.9.33>
16. M.-C. Hsu, D. Kamensky, F. Xu, **J. Kiendl**, C. Wang, M.C.H. Wu, J. Mineroff, A. Reali, Y. Bazilevs, M. Sacks; *Dynamic and fluid-structure interaction simulations of bioprosthetic heart valves using parametric design with T-splines and Fung-type material models*; Computational Mechanics, 55:1211-1225 (2015);
<https://doi.org/10.1007/s00466-015-1166-x0>
15. **J. Kiendl**, M.-C. Hsu, M.C.H. Wu, A. Reali; *Isogeometric Kirchhoff-Love shell formulations for general hyperelastic materials*; Computer Methods in Applied Mechanics and Engineering, 291:280-303 (2015);
<https://doi.org/10.1016/j.cma.2015.03.010>
14. L. Beirão da Veiga, T.J.R. Hughes, **J. Kiendl**, C. Lovadina, J. Niiranen, A. Reali, H. Speleers; *A locking-free model for Reissner-Mindlin plates: Analysis and isogeometric implementation via NURBS and triangular NURPS*; Mathematical Models and Methods in Applied Sciences, 25:1519-1551 (2015);
<https://doi.org/10.1142/S0218202515500402>

13. **J. Kiendl**, F. Auricchio, T.J.R. Hughes, A. Reali; *Single-variable formulations and isogeometric discretizations for shear deformable beams*; Computer Methods in Applied Mechanics and Engineering, 284:988-1004 (2015),
<https://doi.org/10.1016/j.cma.2014.11.011>
12. J.F. Caseiro, R.A.F. Valente, A. Reali, **J. Kiendl**, F. Auricchio, R.J. Alves de Sousa; *Assumed Natural Strain NURBS-based solid-shell element for the analysis of large deformation elasto-plastic thin-shell structures*; Computer Methods in Applied Mechanics and Engineering, 284:861-880 (2015);
<https://doi.org/10.1016/j.cma.2014.10.037>
11. **J. Kiendl**, F. Auricchio, L. Beirão da Veiga, C. Lovadina, A. Reali; *Isogeometric collocation methods for the Reissner-Mindlin plate problem*; Computer Methods in Applied Mechanics and Engineering, 284:489-507 (2015);
<https://doi.org/10.1016/j.cma.2014.09.011>
10. J.F. Caseiro, R.A.F. Valente, A. Reali, **J. Kiendl**, F. Auricchio, R.J. Alves de Sousa; *On the Assumed Natural Strain method to alleviate locking in solid-shell NURBS-based finite elements*; Computational Mechanics, 53:1341-1353 (2014);
<https://doi.org/10.1007/s00466-014-0978-4>
9. **J. Kiendl**, R. Schmidt, R. Wüchner, K.-U. Bletzinger; *Isogeometric shape optimization of shells using semi-analytical sensitivity analysis and sensitivity weighting*; Computer Methods in Applied Mechanics and Engineering, 274:148-167 (2014);
<https://doi.org/10.1016/j.cma.2014.02.001>
8. F. Auricchio, L. Beirão da Veiga, **J. Kiendl**, C. Lovadina, A. Reali; *Locking-free isogeometric collocation methods for spatial Timoshenko rods*; Computer Methods in Applied Mechanics and Engineering, 263:113-126 (2013);
<https://doi.org/10.1016/j.cma.2013.03.009>
7. S. Shojaee, E. Izadpanah, N. Valizadeh, **J. Kiendl** *Free vibration analysis of thin plates by using a NURBS-based isogeometric approach*; Finite Elements in Analysis and Design, 61:23-34 (2012);
<https://doi.org/10.1016/j.finel.2012.06.0050>
6. Y. Bazilevs, M.-C. Hsu, **J. Kiendl**, D.J. Benson; *A Computational Procedure for Pre-Bending of Wind Turbine Blades*; International Journal for Numerical Methods in Engineering, 89:323-336 (2012);
<https://doi.org/10.1002/nme.3244>
5. N. Nguyen-Thanh, **J. Kiendl**, H. Nguyen-Xuan, R. Wüchner, K.-U. Bletzinger, Y. Bazilevs, T. Rabczuk, *Rotation free isogeometric thin shell analysis using PHT-splines*; Computer Methods in Applied Mechanics and Engineering, 200(47- 48):3410-3424 (2011);
<https://doi.org/10.1016/j.cma.2011.08.0140>
4. Y. Bazilevs, M.-C. Hsu, **J. Kiendl**, R. Wüchner, K.-U. Bletzinger; *3D simulation of wind turbine rotors at full scale. Part II: Fluid-structure interaction modeling with composite blades*; International Journal for Numerical Methods in Fluids, 65:236-253 (2011);
<https://doi.org/10.1002/fld.24540>

3. R. Schmidt, **J. Kiendl**, K.-U. Bletzinger, R. Wüchner; *Realization of an integrated structural design process: analysis-suitable geometric modelling and isogeometric analysis*; Computing and Visualization in Science, 13:315-330 (2010);
<https://doi.org/10.1007/s00791-010-0147-z>
2. **J. Kiendl**, Y. Bazilevs, M.-C. Hsu, R. Wüchner, K.-U. Bletzinger; *The bending strip method for isogeometric analysis of Kirchhoff-Love shell structures comprised of multiple patches*; Computer Methods in Applied Mechanics and Engineering, 199:2403-2416 (2010);
<https://doi.org/10.1016/j.cma.2010.03.029>
1. **J. Kiendl**, K.-U. Bletzinger, J. Linhard, R. Wüchner; *Isogeometric shell analysis with Kirchhoff-Love Elements*; Computer Methods in Applied Mechanics and Engineering, 198:3902-3914 (2009);
<https://doi.org/10.1016/j.cma.2009.08.013>

Book chapters

1. M. A. Ghaziani, **J. Kiendl**, L. De Lorenzis; *Isogeometric Multiscale Modeling with Galerkin and Collocation Methods*; Virtual Design and Validation (2020)