SHORT CURRICULUM VITAE OF ALVISE SOMMARIVA

Personal data

- Born in Venice (Italy), October 11, 1968;
- living in Venice (Italy).

Degrees

- B.Sc in *Mathematics*, 1993.
- Ph.D. in *Computational Mathematics*, 1999, Univ. of Padua.
- Research Fellowship, Univ. of Padua (1999-2002).
- Post-Doc Fellowship, Univ. of Padua (2002-2004).
- Research Associate, Univ. of New South Wales (Australia) (Sept.2004- Dec.2005).
- Assistant Professor, Univ. of Padua (2006-2014).
- Associate Professor, Numerical Analysis: Univ. of Padua (2014-).
- Full Professor Habilitation in Numerical Analysis, (period: 05/04/2018 - 05/04/2027).

Research Activity

Author of more than 70 papers in Numerical Analysis, with particular interest in Approximation Theory and Numerical Integration. The selected publications are written in blue.

1. Qbubble: a numerical code for compressed QMC volume and surface integration on union of spheres, with G. Elefante and M.Vianello, submitted.
2. TetraFreeQ: tetrahedra-free quadrature on polyhedral elements, with M. Vianello, submitted on November 30, 2022
3. Special Issue dedicated to Stefano De Marchi on the occasion of his 60th birthday (introduction of the special issue), with L. Bos, F. Dell'Accio, G. Elefante, W. Erb, F. Marchetti, E. Perracchione, D. Poggiali, G. Santin, Dolomites Res. Notes Approx. DRNA 15 (2022), pages i-v.
4. Cubature rules with positive weights on union of disks, with M. Vianello Dolomites Res. Notes Approx. DRNA 15 (2022), Issue 4, pp. 73-81,
5. CQMC: an improved code for low-dimensional Compressed Quasi-MonteCarlo cubature with G. Elefante and M. Vianello, Dolomites Res. Notes Approx. DRNA 14 (2021), pp. 92-100 (Special Issue "Software for Approximation 2022")
6. inRS: implementing the indicator function for NURBS-shaped planar domains, with M. Vianello, Appl. Math. Lett., Volume 130, August 2022, 108026.
7. Low cardinality Positive Interior cubature on NURBS-shaped domains, with M. Vianello, accepted by BIT Numer. Math.
8. On *marcov* inequalities, with L. Bos and S. De Marchi, Dolomites Research Notes on Approximation, 14, issue 1, (2021), pp. 92-100.
9. RBFCUB: a numerical package for near-optimal meshless cubature on general polygons, with R. Cavoretto, A. De Rossi and M. Vianello, Applied Mathematics Letters, 125 (2022), 107704.
10. Near-optimal polynomial interpolation on spherical triangles, with M. Vianello,

Mediterr. J. Math., 19 (2022), article 68. Mediterr. J. Math., to appear in April 2022.

11. Numerical hyperinterpolation over spherical triangles, with M. Vianello, Math. Comput. Simulation 190 (2021), pp. 15-22.
12. Near-algebraic Tchakaloff-like quadrature on spherical triangles, with M. Vianello, Appl. Math. Lett. 120 (2021).
13. RBF moment computation and meshless cubature on general polygonal regions, with M. Vianello, Appl. Math. Comput. 409 (2021).
14. Computing Tchakaloff-like cubature rules on spline curvilinear polygons, with M. Vianello, Dolomites Res. Notes Approx. DRNA 14 (2021), pp. 1-11.
15. Compressed cubature over polygons with applications to optical design, with B. Bauman and M. Vianello, J. Comput. Appl. Math. 370 (2020), published online 10 December 2019
16. Algebraic cubature on polygonal elements with a circular edge, with E. Artioli and M. Vianello, Comput. Math. Appl., published online 5 November 2019
17. Quadrature-based polynomial optimization, with A. Martinez, F. Piazzon and M. Vianello, Optim. Lett. 14 (2020), Pages 1027-1036,
18. On the computation of sets of points with low Lebesgue constant on the unit disk, with G. Meurant, Journal of Computational and Applied Mathematics, Volume 345, 1 January 2019, Pages 388-404.
19. Discrete norming inequalities on sections of sphere, ball and torus with M. Vianello, J. Inequal. Spec. Funct. 9-4 (2018), 113–121
20. Nearly optimal nested sensors location for polynomial regression on complex geometries, with M. Vianello, Sampl. Theory Signal Image Process. 17 (2018), 95–101
21. Subperiodic Trigonometric Hyperinterpolation, with G. Da Fies and M. Vianello, in: Contemporary Computational Mathematics - a celebration of the 80th birthday of Ian Sloan (invited paper) J. Dick, F.Y. Kuo, H. Wozniakowski Eds., Springer, 2018, pp. 283–304
22. Numerical quadrature on the intersection of planar disks, with M. Vianello, FILOMAT 31:13 (2017), 4105–4115
23. Subperiodic trigonometric subsampling: a numerical approach, with M. Vianello, Appl. Anal. Discrete Math. 11 (2017), 470–483
24. Caratheodory-Tchakaloff Least Squares, with F. Piazzon and M. Vianello, Sampling Theory and Applications 2017, IEEE Xplore Digital Library, DOI: 10.1109/SAMPTA.2017.8024337
25. Numerical hyperinterpolation over nonstandard planar regions, with M. Vianello, Math. Comput. Simulation 141 (2017), 110–120
26. On the use of compressed polyhedral quadrature formulas in embedded interface methods, with Y. Sudhakar, M. Vianello and W.A. Wall, SIAM J. Sci. Comput. 39 (2017), B571-B587
27. Optimal polynomial meshes and Caratheodory-Tchakaloff submeshes on the sphere, with P. Leopardi and M. Vianello, Dolomites Res. Notes Approx. DRNA 10 (2017), 18–24
28. Caratheodory-Tchakaloff Subsampling, with F. Piazzon and M. Vianello, Dolomites Res. Notes Approx. DRNA 10 (2017), 5–14 poster presented at DWCAA16, Canazei (Italy), 2016
29. Polynomial approximation and quadrature on geographic rectangles, with M. Gentile and M. Vianello, Appl. Math. Comput. 297 (2017), 159–179 poster

presented at SIAM GeoSciences 2013, Padova (Italy)

30. Polynomial Meshes: Computation and Approximation, with S. De Marchi, F. Piazzon and M. Vianello, Proceedings of CMMSE 2015, 414–425, ISBN 978-84-617-2230-3, ISSN 2312-0177
31. Compression of multivariate discrete measures and applications, with M. Vianello, Numer. Funct. Anal. Optim. 36 (2015), 1198–1223
32. Polynomial fitting and interpolation on circular sections, with M. Vianello, Appl. Math. Comput. 258 (2015), 410–424
33. Multivariate Christoffel functions and hyperinterpolation, with S. De Marchi and M. Vianello, Dolomites Res. Notes Approx. DRNA 7 (2014), 26–33
34. Fast variants of the Golub and Welsch algorithm for symmetric weight functions, with G. Meurant, Numer. Algo. 67, Issue 3 (2014), 491-506.
35. Algebraic cubature by linear blending of elliptical arcs, with G. Da Fies and M. Vianello, Appl. Numer. Math. 74 (2013), 49–61
36. Fast Construction of Fejer and Clenshaw-Curtis rules for general weight functions, Comput. Math. Appl., Volume 65, Issue 4, February 2013, Pages 682-693.
37. Computing almost minimal formulas on the square, with M. Festa, J. Comput. Appl. Math. 236 (2012), 4296-4302.
38. On the generation of symmetric Lebesgue-like points in the triangle, with F. Rapetti and M. Vianello, J. Comput. Appl. Math. 236 (2012), 4925–4932
39. Polynomial approximation and cubature at approximate Fekete and Leja points of the cylinder, with S. De Marchi and M. Marchioro, Appl. Math. Comput. Vol. 218 (2012), 10617-10629.
40. Computing Fekete and Lebesgue points: simplex, square, disk, with M. Briani and M. Vianello, J. Comput. Appl. Math. 236 (2012), 2477–2486
41. On Multivariate Newton Interpolation at Discrete Leja Points, with L. Bos, S. De Marchi and M. Vianello, Dolomites Res. Notes Approx. DRNA 4 (2011), 15–20
42. Polynomial interpolation and cubature over polygons, with M. Gentile and M. Vianello, J. Comput. Appl. Math. 235 (2011), 5232–5239
43. An algebraic cubature formula on curvilinear polygons, with G. Santin and M. Vianello, Appl. Math. Comput. 217 (2011), 10003–10015
44. Geometric Weakly Admissible Meshes, Discrete Least Squares Approximations and Approximate Fekete Points, with L. Bos, J.P. Calvi, N. Levenberg and M. Vianello, Math. Comp. 80 (2011), 1601–1621
45. Padua2DM: fast interpolation and cubature at the Padua points in Matlab/Octave, with M. Caliari, S. De Marchi and A. Sommariva Numer. Algorithms 56 (2011), 45–60
46. Weakly Admissible Meshes and Discrete Extremal Sets, with L. Bos, S. De Marchi and M. Vianello, Numer. Math. Theory Methods Appl. 4 (2011), 1–12
47. Computing multivariate Fekete and Leja points by numerical linear algebra, with L. Bos, S. De Marchi and M. Vianello, SIAM J. Numer. Anal. 48 (2010), 1984–1999 poster presented at ICIAM 2011, Vancouver
48. Least-squares polynomial approximation on weakly admissible meshes: disk and triangle, with L. Bos and M. Vianello, J. Comput. Appl. Math. 235 (2010), 660–668
49. Approximate Fekete points for weighted polynomial interpolation, with M.

Vianello, Electron. Trans. Numer. Anal. 37 (2010), 1–22

50. Gauss-Green cubature and moment computation over arbitrary geometries, with M. Vianello, J. Comput. Appl. Math. 231 (2009), 886–896
51. A numerical code for fast interpolation and cubature at the Padua points, with M. Caliari, S. De Marchi and M. Vianello, Proceedings of the 9th CMMSE (2009), Vol. I, 218–228
52. Computing approximate Fekete points by QR factorizations of Vandermonde matrices, with M. Vianello, Comput. Math. Appl. 57 (2009), 1324–1336
53. Nontensorial Clenshaw-Curtis cubature, with M. Vianello and R. Zanovello Numer. Algorithms 49 (2008), 409–427
54. Meshless cubature over the disk by Thin-Plate Splines, with A. Punzi and M. Vianello J. Comput. Appl. Math. 221 (2008), 430–436
55. Approximation on the sphere using radial basis functions plus polynomials, with I.H. Sloan, Advances in Computational Mathematics, Volume 29, Number 2 / August (2008), 147-177.
56. Product Gauss cubature over polygons based on Green's integration formula with M. Vianello BIT Numerical Mathematics 47 (2007), 441–453
57. Meshless cubature by Green's formula, with M. Vianello Appl. Math. Comput. 183 (2006), 1098–1107
58. Integration by RBF over the Sphere, with R.S. Womersley, Preprint UNSW, AMR05 17.
59. Numerical cubature on scattered data by radial basis functions, with M. Vianello, Computing 76 (2006), 295–310
60. Quadrature over the sphere, with Kendall Atkinson, Electronic Transactions in Numerical Analysis, 20 (2005), 104-118.
61. On the numerical solution of some semilinear elliptic problems II, with Kendall Atkinson, Computing, 74 (2005), 159-175.
62. Adaptive bivariate Chebyshev approximation, with M. Vianello and R. Zanovello, Numer. Algorithms 38 (2005), no. 1-3, 79–94
63. A fast Nystrom-Broyden solver by Chebyshev compression, Numerical Algorithms, 38 (2005), 47-60.
64. Adaptive bivariate Chebyshev approximation, with M. Vianello, R. Zanovello, Numer. Algorithms 38 (2005), 79–94
65. Adaptive bivariate Chebyshev approximation and efficient evaluation of integral operators, with A. Mardegan, M. Vianello, R. Zanovello, Appl. Numer. Anal. Comput. Math. 1 (2004), 115–121
66. Fast summation of power series with coefficients analytic at infinity, with M. Vianello, R. Zanovello, Numer. Algorithms 27 (2001), 77–87
67. Positive multiplication preserves dissipativity in commutative C*-algebras, with M. Vianello, J. Inequal. Appl. 6 (2001), 247–251
68. Analisi costruttiva e numerica per una classe di equazioni di Hammerstein della teoria del trasporto, Bollettino UMI, Supplemento Speciale Tesi di Dottorato, Serie 8 3-A (2000) La Matematica nella Societá e nella Cultura, fasc. n.1S, 221–224, Unione Matematica Italiana.
69. Computing positive fixed-points of decreasing Hammerstein operators by relaxed iterations, with M. Vianello, J. Integral Equations Appl. 12 (2000), 95–112
70. Relaxed Picard-like methods for nonlinear integral equations arising in transport theory, with E. Facchinello, M. Vianello, Applied and industrial mathe-

matics, Venice–2, 1998, 273–285, Kluwer Acad. Publ., Dordrecht, 2000

71. Constructive approximation for a class of perturbed Hammerstein integral equations, with M. Vianello, Nonlinear Anal. 41 (2000), Ser. A: Theory Methods, 177–185
72. Constructive analysis of purely integral Boltzmann models, with M. Vianello, J. Integral Equations Appl. 11 (1999), 393–404
73. Approximating fixed-points of decreasing operators in spaces of continuous functions, with M. Vianello, Numer. Funct. Anal. Optim. 19 (1998), 635–646

Conferences/Workshops organization

- DWCAA 2006, 2009, 2012, 2016, 2021,
- DRWA 2007, 2010, 2011, 2013, 2014, 2015, 2017, 2018, 2019, 2020,
- RITA PhD seminars 2022,
- ATMA 2023,
- SA23 (scientific committee).

Scientific participation to national and internationals research projects and research grants

- Participant in 11 research projects.
- Principal investigator of *Conditioning issues in multivariate approximation and image reconstruction*, CPDA143275, 24 months (21.8 kEuros, 2015-2017).
- GNCS, *Methods and software for multivariate integral models* (12 months, 2.1 kEuros, as resp., 2021-2022).
- University of Padua, Grant for hiring a research associate, project title *Metodi di approssimazione su domini di tipo NURBS/Approximation methods on NURBS-shaped domains*, (12 months, 20 kEuros, as resp., 2022).
- GNCS *Organizzazione Convegni Scuole e Workshop, CUP E55F22000270001* (0.8 kEuros, as resp., 2022-2023).

Editorial experience

- Editor of Dolomites Research Notes on Approximation, March 2017-.
- Co-managing editor, Journal of Approximation Software, to be launched in 2023.
- Editor of the volume 5-th Dolomites Workshop on Constructive Approximation and Applications. Special Issue dedicated to Robert Schaback on the occasion of his 75th birthday, Dolomites Research Notes on Approximation, Volume 15, issue 3, October 2022, DOI: 10.14658/pupj-drna-2022-3-1, ISSN Number: 2035-6803.
- Editor of the volume Special Issue dedicated to Stefano De Marchi on the occasion of his 60th birthday, Dolomites Research Notes on Approximation, Volume 15, issue 4, December 2022, ISSN Number: 2035-6803.

Duties

- PhD jury of the candidate Koen Poppe (supervisor R. Cools), Oct.2012, KU Leuven, Belgium.
- Research fellowship committee, ISMAR, Venezia, 2013.
- Research fellowship committee (resp. M. Redivo Zaglia), Univ. of Padua, 2014.
- Research fellowship committee, *Krylov Methods for Bilinear forms and applications* (responsible M. Redivo Zaglia), Univ. of Padua, 2016.
- PhD jury, Comm. 141, Pozza Stefano, Univ. of Padua, October 2015.

- PhD referee, Sai Vidya Institute of Technology, Bengaluru (India), Nov.2018.
- Research fellowship committee (resp. M. Vianello), *Numerical modelling by Caratheodory-Tchakaloff Quadrature Compression*, Univ. of Padua, Nov. 2018.
- Research fellowship committee (resp. F. Marcuzzi), *Metodi di gradiente prossimali per l'identificazione di sistemi*, Univ. of Padua, May 2019.
- PhD jury, Dr. Giada Serafini, Univ. of Basilicata, May 2019.
- Evaluation Committee (job vacancies in Mathematics for Engineering), Univ. of Padua, July 2019.
- Member of an examining board (hiring Lecturer of B-type), Univ. of Padua, December-April 2020.
- Research fellowship committee (resp. F. Marcuzzi), *Digital twins di sistemi termodinamici e meccanici controllati*, Univ. of Padua, October 2020.
- Member of an examining board (hiring Lecturer of A-type), Univ. of Padua, November 2021.
- Member of an examining board (hiring Lecturer of A-type), Univ. of Turin, November 2021.
- Research fellowship committee (resp. F. Marcuzzi), *Numerical linear algebra for multivariate polynomial modelling*, Univ. of Padua, January 2022.
- Research fellowship committee (responsible of the grant: A. Sommariva), University of Padua, November 2022.

Memberships

- Member of Commissione Istruttoria per l'Attribuzione degli Impegni Didattici, Dept. of Mathematics, Univ. of Padua, 2009-2010- 2011.
- Responsible of Numlab, Dept. of Mathematics, Univ. of Padua, 2014-2019.
- Member of Commissione Comunicazione, Dept. of Mathematics, Univ. of Padua, 2019-.
- Member of Commissione Scientifica di Area, Dept. of Mathematics, Univ. of Padua, 2019-.
- Member of Research ITalian network on Approximation (RITA) 2016-.
- National coordinator of Research ITalian network on Approximation, 2022-.
- Member of GNCS.
- Member of CAA: Padua-Verona research group on Constructive Approximation and Applications.
- Editor of Dolomites Research Notes on Approximation, March 2017-.
- Member of Ph.D. Committee (Dept. of Mathematics, Univ. of Padua), 2019-2020, 2022-.
- Member of Teoria Dell'Approssimazione e Applicazioni (TAA) (Gruppo UMI).

Supervisory experience

He has been supervisor of more than 30 degree theses.

Prizes

2021 Optimization Letters Best Paper Award.

Citation indices

- *Google Scholar*: 1402 (640 since 2018); H-index: 20 (13 since 2018); i10-index: 39 (19 since 2018).
- *Scopus*: 802 (34 documents); H-index: 15.

Orchid code
0000-0002-8902-8063

Padua, February 8, 2023.