

Bibliography

- [1] Zhengguang Liu, Aijie Cheng, and Xiaoli Li. A novel finite difference discrete scheme for the time fractional diffusion-wave equation. *Applied Numerical Mathematics*, 134:17–30, 2018.
- [2] Akanksha Bhardwaj and Alpesh Kumar. A meshless method for time fractional nonlinear mixed diffusion and diffusion-wave equation. *Applied Numerical Mathematics*, 160:146–165, 2021.
- [3] Guang-Hua Gao, Zhi-Zhong Sun, and Hong-Wei Zhang. A new fractional numerical differentiation formula to approximate the Caputo fractional derivative and its applications. *Journal of Computational Physics*, 259:33–50, 2014.
- [4] Jianxiong Cao, Changpin Li, and YangQuan Chen. High-order approximation to Caputo derivatives and Caputo-type advection-diffusion equations (ii). *Fractional calculus and Applied analysis*, 18(3):735–761, 2015.
- [5] Vasily E Tarasov. *Fractional dynamics: applications of fractional calculus to dynamics of particles, fields and media*. Springer Science & Business Media, 2011.
- [6] Francesco Mainardi. *Fractional calculus: some basic problems in continuum and statistical mechanics*. Springer, 1997.

-
- [7] Vasily E Tarasov. Review of some promising fractional physical models. *International Journal of Modern Physics B*, 27(09):1330005, 2013.
- [8] Vasily E Tarasov and Juan J Trujillo. Fractional power-law spatial dispersion in electrodynamics. *Annals of Physics*, 334:1–23, 2013.
- [9] C Ionescu, A Lopes, Dana Copot, JA Tenreiro Machado, and JHT Bates. The role of fractional calculus in modeling biological phenomena: A review. *Communications in Nonlinear Science and Numerical Simulation*, 51:141–159, 2017.
- [10] Francesco Mainardi and Paolo Paradisi. A model of diffusive waves in viscoelasticity based on fractional calculus. In *Proceedings of the 36th IEEE Conference on Decision and Control*, volume 5, pages 4961–4966. IEEE, 1997.
- [11] Om Agrawal. Some generalized fractional calculus operators and their applications in integral equations. *Fract. Calc. Appl. Anal.*, 15(4):700–711, 2012.
- [12] Stefan G Samko, Anatoly A Kilbas, Oleg I Marichev, et al. *Fractional integrals and derivatives*, volume 1. Gordon and breach science publishers, Yverdon Yverdon-les-Bains, Switzerland, 1993.
- [13] A Kilbas, HM Srivastava, and JJ Trujillo. New book:” theory and applications of fractional differential equations”, elsevier, north-holland mathematics studies, 204. *Fract. Calc. Appl. Anal.*, 9(1):71, 2006.
- [14] Igor Podlubny. *Fractional differential equations: an introduction to fractional derivatives, fractional differential equations, to methods of their solution and some of their applications*, volume 198. Elsevier, 1998.

-
- [15] Dumitru Baleanu, Kai Diethelm, Enrico Scalas, and Juan J Trujillo. *Fractional calculus: models and numerical methods*, volume 3. World Scientific, Singapor, 2012.
- [16] Igor Podlubny, Richard L Magin, and Iryna Trymorush. Niels henrik abel and the birth of fractional calculus. *Fractional Calculus and Applied Analysis*, 20(5):1068–1075, 2017.
- [17] Ralf Metzler, Jae-Hyung Jeon, Andrey G Cherstvy, and Eli Barkai. Anomalous diffusion models and their properties: non-stationarity, non-ergodicity, and ageing at the centenary of single particle tracking. *Physical Chemistry Chemical Physics*, 16(44):24128–24164, 2014.
- [18] Jae-Hyung Jeon, Vincent Tejedor, Stas Burov, Eli Barkai, Christine Selhuber-Unkel, Kirstine Berg-Sørensen, Lene Oddershede, and Ralf Metzler. In vivo anomalous diffusion and weak ergodicity breaking of lipid granules. *Physical review letters*, 106(4):048103, 2011.
- [19] Julia F Reverey, Jae-Hyung Jeon, Han Bao, Matthias Leippe, Ralf Metzler, and Christine Selhuber-Unkel. Superdiffusion dominates intracellular particle motion in the supercrowded cytoplasm of pathogenic acanthamoeba castellanii. *Scientific reports*, 5(1):11690, 2015.
- [20] Luca Marinangeli, Farbod Alijani, and S Hassan HosseinNia. Fractional-order positive position feedback compensator for active vibration control of a smart composite plate. *Journal of Sound and Vibration*, 412:1–16, 2018.
- [21] Yang Yang and Dingyü Xue. An actual load forecasting methodology by interval grey modeling based on the fractional calculus. *ISA transactions*, 82:200–209, 2018.

-
- [22] Zhuo Li, Lu Liu, Sina Dehghan, YangQuan Chen, and Dingyü Xue. A review and evaluation of numerical tools for fractional calculus and fractional order controls. *International journal of control*, 90(6):1165–1181, 2017.
- [23] Aleksei Tepljakov and Aleksei Tepljakov. Fomcon: fractional-order modeling and control toolbox. *Fractional-order modeling and control of dynamic systems*, pages 107–129, 2017.
- [24] Jun Zhang, Zhihui Wei, and Liang Xiao. A fast adaptive reweighted residual-feedback iterative algorithm for fractional-order total variation regularized multiplicative noise removal of partly-textured images. *Signal processing*, 98:381–395, 2014.
- [25] Yi-Fei Pu, Ji-Liu Zhou, and Xiao Yuan. Fractional differential mask: a fractional differential-based approach for multiscale texture enhancement. *IEEE transactions on image processing*, 19(2):491–511, 2009.
- [26] Dali Chen, Yangquan Chen, and Dingyu Xue. Three fractional-order tv-l2 models for image denoising. *J. Comput. Inf. Syst*, 9(12):4773–4780, 2013.
- [27] Milan Cajić, Danilo Karličić, and Mihailo Lazarević. Nonlocal vibration of a fractional order viscoelastic nanobeam with attached nanoparticle. *Theoretical and applied mechanics*, 42(3):167–190, 2015.
- [28] Xiaoping Wang, Haitao Qi, Bo Yu, Zhen Xiong, and Huanying Xu. Analytical and numerical study of electroosmotic slip flows of fractional second grade fluids. *Communications in Nonlinear Science and Numerical Simulation*, 50:77–87, 2017.
- [29] Behrouz Mehdinejadi, Abd Ali Naseri, Hossein Jafari, Afshin Ghanbarzadeh, and Dumitru Baleanu. A mathematical model for simulation of

- a water table profile between two parallel subsurface drains using fractional derivatives. *Computers & Mathematics with Applications*, 66(5):785–794, 2013.
- [30] Bo Yu, Xiaoyun Jiang, and Chu Wang. Numerical algorithms to estimate relaxation parameters and caputo fractional derivative for a fractional thermal wave model in spherical composite medium. *Applied Mathematics and Computation*, 274:106–118, 2016.
- [31] Richard L Magin, Osama Abdullah, Dumitru Baleanu, and Xiaohong Joe Zhou. Anomalous diffusion expressed through fractional order differential operators in the bloch–torrey equation. *Journal of Magnetic Resonance*, 190(2):255–270, 2008.
- [32] David A Benson, Stephen W Wheatcraft, and Mark M Meerschaert. The fractional-order governing equation of lévy motion. *Water resources research*, 36(6):1413–1423, 2000.
- [33] Ghazal Moradi and Behrouz Mehdinejadani. Modelling solute transport in homogeneous and heterogeneous porous media using spatial fractional advection-dispersion equation. *Soil & Water Research*, 13(1), 2018.
- [34] Yong Zhang, Li Chen, Donald M Reeves, and HongGuang Sun. A fractional-order tempered-stable continuity model to capture surface water runoff. *Journal of Vibration and Control*, 22(8):1993–2003, 2016.
- [35] Alka Sharma, Vijay Luxami, and Kamaldeep Paul. Purine-benzimidazole hybrids: synthesis, single crystal determination and in vitro evaluation of anti-tumor activities. *European Journal of Medicinal Chemistry*, 93:414–422, 2015.
- [36] Meng Zhao, Shuai He, Hong Wang, and Guan Qin. An integrated fractional partial differential equation and molecular dynamics model of anomalously

- diffusive transport in heterogeneous nano-pore structures. *Journal of Computational Physics*, 373:1000–1012, 2018.
- [37] Anatolii Aleksandrovich Kilbas, Hari Mohan Srivastava, and Juan J Trujillo. *Theory and applications of fractional differential equations*, volume 204. Elsevier Science Limited, 2006.
- [38] V Daftardar-Gejji and H Jafari. Boundary value problems for fractional diffusion-wave equation. *Aust. J. Math. Anal. Appl*, 3(1):8, 2006.
- [39] Natalia Kopteva. Error analysis of an l2-type method on graded meshes for a fractional-order parabolic problem. *Mathematics of Computation*, 90(327):19–40, 2021.
- [40] Natalia Kopteva and Martin Stynes. Analysis and numerical solution of a riemann-liouville fractional derivative two-point boundary value problem. *Advances in Computational Mathematics*, 43:77–99, 2017.
- [41] Martin Stynes and José Luis Gracia. A finite difference method for a two-point boundary value problem with a caputo fractional derivative. *IMA Journal of Numerical Analysis*, 35(2):698–721, 2015.
- [42] Natalia Kopteva and Martin Stynes. Stabilised approximation of interior-layer solutions of a singularly perturbed semilinear reaction–diffusion problem. *Numerische Mathematik*, 119(4):787–810, 2011.
- [43] Kai Diethelm, Stefan Siegmund, and HT Tuan. Asymptotic behavior of solutions of linear multi-order fractional differential systems. *Fractional calculus and applied analysis*, 20(5):1165–1195, 2017.

-
- [44] Kai Diethelm. An efficient parallel algorithm for the numerical solution of fractional differential equations. *Fractional Calculus and Applied Analysis*, 14(3):475–490, 2011.
- [45] Kai Diethelm and Hoang The Tuan. Upper and lower estimates for the separation of solutions to fractional differential equations. *Fractional Calculus and Applied Analysis*, 25(1):166–180, 2022.
- [46] Kai Diethelm, Virginia Kiryakova, Yuri Luchko, JA Tenreiro Machado, and Vasily E Tarasov. Trends, directions for further research, and some open problems of fractional calculus. *Nonlinear Dynamics*, 107(4):3245–3270, 2022.
- [47] Charles Tadjeran, Mark M Meerschaert, and Hans-Peter Scheffler. A second-order accurate numerical approximation for the fractional diffusion equation. *Journal of computational physics*, 213(1):205–213, 2006.
- [48] Gongsheng Li, Dali Zhang, Xianzheng Jia, and Masahiro Yamamoto. Simultaneous inversion for the space-dependent diffusion coefficient and the fractional order in the time-fractional diffusion equation. *Inverse Problems*, 29(6):065014, 2013.
- [49] Charles Tadjeran and Mark M Meerschaert. A second-order accurate numerical method for the two-dimensional fractional diffusion equation. *Journal of Computational Physics*, 220(2):813–823, 2007.
- [50] Ahmed MA El-Sayed. Fractional-order diffusion-wave equation. *International Journal of Theoretical Physics*, 35:311–322, 1996.
- [51] Francesco Mainardi. The time fractional diffusion-wave equation. *Radiophysics and Quantum Electronics*, 38(1):13–24, 1995.

-
- [52] Om P Agrawal. Solution for a fractional diffusion-wave equation defined in a bounded domain. *Nonlinear Dynamics*, 29:145–155, 2002.
- [53] Yuri Luchko and Francesco Mainardi. Cauchy and signaling problems for the time-fractional diffusion-wave equation. *Journal of Vibration and Acoustics*, 136(5):050904, 2014.
- [54] Changpin Li and Fanhai Zeng. *Numerical methods for fractional calculus*, volume 24. CRC Press, 2015.
- [55] Pradip Roul and Vikas Rohil. A novel high-order numerical scheme and its analysis for the two-dimensional time-fractional reaction-subdiffusion equation. *Numerical Algorithms*, 90(4):1357–1387, 2022.
- [56] M Ramezani, R Mokhtari, and G Haase. Some high order formulae for approximating Caputo fractional derivatives. *Applied Numerical Mathematics*, 153:300–318, 2020.
- [57] Vickie E Lynch, Benjamin A Carreras, D del Castillo-Negrete, KM Ferreira-Mejias, and HR Hicks. Numerical methods for the solution of partial differential equations of fractional order. *Journal of Computational Physics*, 192(2):406–421, 2003.
- [58] Changpin Li and An Chen. Numerical methods for fractional partial differential equations. *International Journal of Computer Mathematics*, 95(6-7):1048–1099, 2018.
- [59] Xiao Liu, Yu Bo, and Yuanfeng Jin. A numerical method for the variable-order time-fractional wave equations based on the H2N2 approximation. *Journal of Function Spaces*, 2022:1–9, 2022.

-
- [60] Enyu Fan, Changpin Li, and Zhiqiang Li. Numerical approaches to Caputo–Hadamard fractional derivatives with applications to long-term integration of fractional differential systems. *Communications in Nonlinear Science and Numerical Simulation*, 106:106096, 2022.
- [61] Mohammad Prawesh Alam, Arshad Khan, and Dumitru Baleanu. A high-order unconditionally stable numerical method for a class of multi-term time-fractional diffusion equation arising in the solute transport models. *International Journal of Computer Mathematics*, 100(1):105–132, 2023.
- [62] Zhi-Zhong Sun and Xiaonan Wu. A fully discrete difference scheme for a diffusion-wave system. *Applied Numerical Mathematics*, 56(2):193–209, 2006.
- [63] Ruilian Du, Yubin Yan, and Zongqi Liang. A high-order scheme to approximate the Caputo fractional derivative and its application to solve the fractional diffusion wave equation. *Journal of Computational Physics*, 376:1312–1330, 2019.
- [64] Yuan-Ming Wang and Zi-Yun Zheng. A second-order L_2 - 1σ Crank-Nicolson difference method for two-dimensional time-fractional wave equations with variable coefficients. *Computers & Mathematics with Applications*, 118:183–207, 2022.
- [65] Om P Agrawal. A general solution for the fourth-order fractional diffusion-wave equation. *Fractional Calculus and Applied Analysis*, 3(1):1–12, 2000.
- [66] Om P Agrawal. A general solution for a fourth-order fractional diffusion–wave equation defined in a bounded domain. *Computers & Structures*, 79(16):1497–1501, 2001.

-
- [67] Mehdi Dehghan, Mostafa Abbaszadeh, and Akbar Mohebbi. Analysis of a meshless method for the time fractional diffusion-wave equation. *Numerical algorithms*, 73:445–476, 2016.
- [68] Mehdi Dehghan, Mostafa Abbaszadeh, and Akbar Mohebbi. Analysis of two methods based on galerkin weak form for fractional diffusion-wave: Meshless interpolating element free galerkin (iefg) and finite element methods. *Engineering Analysis with Boundary Elements*, 64:205–221, 2016.
- [69] Akanksha Bhardwaj, Alpesh Kumar, and Awanish Kumar Tiwari. An RBF based finite difference method for the numerical approximation of multi-term nonlinear time fractional two dimensional diffusion-wave equation. *International Journal of Applied and Computational Mathematics*, 8(2):84, 2022.
- [70] Akanksha Bhardwaj and Alpesh Kumar. A numerical solution of time-fractional mixed diffusion and diffusion-wave equation by an RBF-based meshless method. *Engineering with Computers*, 38(2):1883–1903, 2022.
- [71] Pari J Kundaliya and Sudhakar Chaudhary. Symmetric fractional order reduction method with L1 scheme on graded mesh for time fractional nonlocal diffusion-wave equation of Kirchhoff type. *arXiv preprint arXiv:2301.01670*, 2023.
- [72] Sudhakar Chaudhary and Vimal Srivastava. Semi-discrete finite-element approximation of nonlocal hyperbolic problem. *Applicable Analysis*, 101(2):479–496, 2022.
- [73] Ya-Nan Zhang, Zhi-Zhong Sun, and Xuan Zhao. Compact alternating direction implicit scheme for the two-dimensional fractional diffusion-wave equation. *SIAM Journal on Numerical Analysis*, 50(3):1535–1555, 2012.

-
- [74] Limei Li, Da Xu, and Man Luo. Alternating direction implicit Galerkin finite element method for the two-dimensional fractional diffusion-wave equation. *Journal of Computational Physics*, 255:471–485, 2013.
- [75] Pin Lyu and Seakweng Vong. A nonuniform L2 formula of Caputo derivative and its application to a fractional Benjamin–Bona–Mahony-type equation with nonsmooth solutions. *Numerical Methods for Partial Differential Equations*, 36(3):579–600, 2020.
- [76] Rui-Lian Du and Zhi-Zhong Sun. Temporal second-order difference methods for solving multi-term time fractional mixed diffusion and wave equations. *Numerical Algorithms*, 88:191–226, 2021.
- [77] Pin Lyu, Yuxiang Liang, and Zhibo Wang. A fast linearized finite difference method for the nonlinear multi-term time-fractional wave equation. *Applied Numerical Mathematics*, 151:448–471, 2020.
- [78] Yaoyao Zhang and Zhibo Wang. Numerical simulation for time-fractional diffusion-wave equations with time delay. *Journal of Applied Mathematics and Computing*, 69(1):137–157, 2023.
- [79] Hong Sun, Zhi-Zhong Sun, and Guang-Hua Gao. Some temporal second order difference schemes for fractional wave equations. *Numerical Methods for Partial Differential Equations*, 32(3):970–1001, 2016.
- [80] Sarita Kumari and Rajesh K Pandey. Alternating direction implicit approach for the two-dimensional time fractional nonlinear klein–gordon and sine–gordon problems. *Communications in Nonlinear Science and Numerical Simulation*, 130:107769, 2024.

-
- [81] Mingrong Cui. An alternating direction implicit compact finite difference scheme for the multi-term time-fractional mixed diffusion and diffusion wave equation. *Mathematics and Computers in Simulation*, 2023.
- [82] Zhi-Zhong Sun, Cui-Cui Ji, and Ruilian Du. A new analytical technique of the L-type difference schemes for time fractional mixed sub-diffusion and diffusion-wave equations. *Applied Mathematics Letters*, 102:106115, 2020.
- [83] Yanqin Liu, HongGuang Sun, Xiuling Yin, and Libo Feng. Fully discrete spectral method for solving a novel multi-term time-fractional mixed diffusion and diffusion-wave equation. *Zeitschrift für angewandte Mathematik und Physik*, 71:1–19, 2020.
- [84] Zeting Liu, Fawang Liu, and Fanhai Zeng. An alternating direction implicit spectral method for solving two dimensional multi-term time fractional mixed diffusion and diffusion-wave equations. *Applied Numerical Mathematics*, 136:139–151, 2019.
- [85] Omid Nikan, Zakieh Avazzadeh, and JA Tenreiro Machado. Numerical approximation of the nonlinear time-fractional telegraph equation arising in neutron transport. *Communications in Nonlinear Science and Numerical Simulation*, 99:105755, 2021.
- [86] Zhi-Zhong Sun and Xiaonan Wu. A fully discrete difference scheme for a diffusion-wave system. *Applied Numerical Mathematics*, 56(2):193–209, 2006.
- [87] David A Benson, Stephen W Wheatcraft, and Mark M Meerschaert. Application of a fractional advection-dispersion equation. *Water resources research*, 36(6):1403–1412, 2000.

-
- [88] Liuzong Zhou and HM Selim. Application of the fractional advection-dispersion equation in porous media. *Soil Science Society of America Journal*, 67(4):1079–1084, 2003.
- [89] Dumitru Baleanu, Guo-Cheng Wu, and Sheng-Da Zeng. Chaos analysis and asymptotic stability of generalized caputo fractional differential equations. *Chaos, Solitons & Fractals*, 102:99–105, 2017.
- [90] Muhammad Sajid Iqbal, Muhammad Waqas Yasin, Nauman Ahmed, Ali Akgül, Muhammad Rafiq, and Ali Raza. Numerical simulations of nonlinear stochastic newell-whitehead-segel equation and its measurable properties. *Journal of Computational and Applied Mathematics*, 418:114618, 2023.
- [91] Mohammad Partohaghighi, Zahrasadat Mirtalebi, Ali Akgül, and Muhammad Bilal Riaz. Fractal–fractional klein–gordon equation: A numerical study. *Results in Physics*, 42:105970, 2022.
- [92] Debasis Dan, Chris Mueller, Kun Chen, and James A Glazier. Solving the advection-diffusion equations in biological contexts using the cellular potts model. *Physical Review E*, 72(4):041909, 2005.
- [93] JG Verwer, JG Blom, and W Hundsdorfer. An implicit-explicit approach for atmospheric transport-chemistry problems. *Applied Numerical Mathematics*, 20(1-2):191–209, 1996.
- [94] Mehdi Dehghan. Weighted finite difference techniques for the one-dimensional advection–diffusion equation. *Appl. Math. Comput.*, 147(2):307–319, 2004.
- [95] Akbar Mohebbi and Mehdi Dehghan. High-order compact solution of the one-dimensional heat and advection–diffusion equations. *Applied mathematical modelling*, 34(10):3071–3084, 2010.

-
- [96] Kolade M Owolabi. High-dimensional spatial patterns in fractional reaction-diffusion system arising in biology. *Chaos, Solitons & Fractals*, 134:109723, 2020.
- [97] A Kilbas Anatoly. Hadamard-type fractional calculus. *Journal of the Korean Mathematical Society*, 38(6):1191–1204, 2001.
- [98] Sebastien Gaboury, Richard Tremblay, and Benoît-Jean Fugère. Some relations involving a generalized fractional derivative operator. *Journal of Inequalities and Applications*, 2013(1):1–9, 2013.
- [99] Kassem Mustapha. An l1 approximation for a fractional reaction-diffusion equation, a second-order error analysis over time-graded meshes. *SIAM Journal on Numerical Analysis*, 58(2):1319–1338, 2020.
- [100] Anatoly A Alikhanov. A new difference scheme for the time fractional diffusion equation. *Journal of Computational Physics*, 280:424–438, 2015.
- [101] Omar Abu Arqub. Numerical solutions for the robin time-fractional partial differential equations of heat and fluid flows based on the reproducing kernel algorithm. *International Journal of Numerical Methods for Heat & Fluid Flow*, 28(4):828–856, 2018.
- [102] Zhiqiang Li and Yubin Yan. Error estimates of high-order numerical methods for solving time fractional partial differential equations. *Fractional Calculus and Applied Analysis*, 21(3):746–774, 2018.
- [103] Chunwan Lv and Chuanju Xu. Error analysis of a high order method for time-fractional diffusion equations. *SIAM Journal on Scientific Computing*, 38(5):A2699–A2724, 2016.

-
- [104] Yufeng Xu and Om Agrawal. Numerical solutions and analysis of diffusion for new generalized fractional advection-diffusion equations. *Open Physics*, 11(10):1178–1193, 2013.
- [105] Kamlesh Kumar, Rajesh K Pandey, and Farheen Sultana. Numerical schemes with convergence for generalized fractional integro-differential equations. *Journal of Computational and Applied Mathematics*, 388:113318, 2021.
- [106] Swati Yadav, Rajesh K Pandey, Anil K Shukla, and Kamlesh Kumar. High-order approximation for generalized fractional derivative and its application. *Internat. J. Numer. Methods Heat Fluid Flow*, 11:0700, 2019.
- [107] Qinxu Ding and Patricia JY Wong. A higher order numerical scheme for generalized fractional diffusion equations. *Internat. J. Numer. Methods Fluids*, 92(12):1866–1889, 2020.
- [108] Martin Stynes, Eugene O’Riordan, and José Luis Gracia. Error analysis of a finite difference method on graded meshes for a time-fractional diffusion equation. *SIAM Journal on Numerical Analysis*, 55(2):1057–1079, 2017.
- [109] Hongyi Zhu and Chuanju Xu. A fast high order method for the time-fractional diffusion equation. *SIAM Journal on Numerical Analysis*, 57(6):2829–2849, 2019.
- [110] Chaoyu Quan and Xu Wu. Global-in-time h^1 -stability of l_2 - l_1 σ method on general nonuniform meshes for subdiffusion equation. *Journal of Scientific Computing*, 95(2):59, 2023.

-
- [111] Pradip Roul and Vikas Rohil. A high-order numerical scheme based on graded mesh and its analysis for the two-dimensional time-fractional convection-diffusion equation. *Computers & Mathematics with Applications*, 126:1–13, 2022.
- [112] Farheen Sultana, Rajesh K Pandey, Deeksha Singh, and Om P Agrawal. High order approximation on non-uniform meshes for generalized time-fractional telegraph equation. *MethodsX*, 9:101905, 2022.
- [113] Ruilian Du, Anatoly A Alikhanov, and Zhi-Zhong Sun. Temporal second order difference schemes for the multi-dimensional variable-order time fractional sub-diffusion equations. *Computers & Mathematics with Applications*, 79(10):2952–2972, 2020.
- [114] Anatoly A Alikhanov, Mohammad Shahbazi Asl, and Chengming Huang. Stability analysis of a second-order difference scheme for the time-fractional mixed sub-diffusion and diffusion-wave equation. *Fractional Calculus and Applied Analysis*, 27(1):102–123, 2024.
- [115] Anatoly A Alikhanov, Mohammad Shahbazi Asl, Chengming Huang, and Aslanbek Khibiev. A second-order difference scheme for the nonlinear time-fractional diffusion-wave equation with generalized memory kernel in the presence of time delay. *Journal of Computational and Applied Mathematics*, 438:115515, 2024.
- [116] Wan Wang, Haixiang Zhang, Ziyi Zhou, and Xuehua Yang. A fast compact finite difference scheme for the fourth-order diffusion-wave equation. *International Journal of Computer Mathematics*, pages 1–24, 2024.

-
- [117] Hong Sun, Xuan Zhao, and Zhi-zhong Sun. The temporal second order difference schemes based on the interpolation approximation for the time multi-term fractional wave equation. *Journal of Scientific Computing*, 78:467–498, 2019.
- [118] Jinye Shen, Changpin Li, and Zhi-zhong Sun. An h2n2 interpolation for caputo derivative with order in $(1, 2)$ and its application to time-fractional wave equations in more than one space dimension. *Journal of Scientific Computing*, 83(2):38, 2020.
- [119] Zhijun Tan and Yunhua Zeng. Temporal second-order fully discrete two-grid methods for nonlinear time-fractional variable coefficient diffusion-wave equations. *Applied Mathematics and Computation*, 466:128457, 2024.
- [120] Maohua Ran and Xiaojuan Lei. A fast difference scheme for the variable coefficient time-fractional diffusion wave equations. *Applied Numerical Mathematics*, 167:31–44, 2021.
- [121] Reetika Chawla and Devendra Kumar. Higher-order tension spline-based numerical technique for time fractional reaction-diffusion wave equation with damping. *International Journal of Dynamics and Control*, 12(3):634–649, 2024.
- [122] Reetika Chawla and Devendra Kumar. A high order numerical scheme for time-fractional telegraph equation via cubic spline in tension. *Differential Equations and Dynamical Systems*, pages 1–26, 2024.
- [123] Suruchi Singh, Swarn Singh, and Anu Aggarwal. A new spline technique for the time fractional diffusion-wave equation. *MethodsX*, page 102007, 2023.

-
- [124] Dan Zhang, Na An, and Chaobao Huang. Local error estimates of the fourth-order compact difference scheme for a time-fractional diffusion-wave equation. *Computers & Mathematics with Applications*, 142:283–292, 2023.
- [125] Rui-lian Du and Jinye Shen. Second-order difference scheme for the time fractional mixed diffusion-wave equation with initial weak regularity. *Mathematical Methods in the Applied Sciences*, 2023.
- [126] Hong-Lin Liao, William McLean, and Jiwei Zhang. A second-order scheme with nonuniform time steps for a linear reaction-sudiffusion problem. *arXiv preprint arXiv:1803.09873*, 2018.
- [127] Anatoly A Alikhanov, Mohammad Shahbazi Asl, and Chengming Huang. Stability analysis of a second-order difference scheme for the time-fractional mixed sub-diffusion and diffusion-wave equation. *Fractional Calculus and Applied Analysis*, pages 1–22, 2023.
- [128] Alpesh Kumar and Akanksha Bhardwaj. A local meshless method for time fractional nonlinear diffusion wave equation. *Numerical Algorithms*, 85:1311–1334, 2020.
- [129] Mehdi Dehghan, Mostafa Abbaszadeh, and Akbar Mohebbi. An implicit rbf meshless approach for solving the time fractional nonlinear sine-gordon and klein–gordon equations. *Engineering Analysis with Boundary Elements*, 50:412–434, 2015.
- [130] Sarita Kumari and Rajesh K Pandey. Single-term and multi-term nonuniform time-stepping approximation methods for two-dimensional time-fractional diffusion-wave equation. *Computers & Mathematics with Applications*, 151:359–383, 2023.

-
- [131] Bangti Jin, Raytcho Lazarov, and Zhi Zhou. An analysis of the l1 scheme for the subdiffusion equation with nonsmooth data. *IMA Journal of Numerical Analysis*, 36(1):197–221, 2016.
- [132] Wen Cao, Yufeng Xu, and Zhoushun Zheng. Finite difference/collocation method for a generalized time-fractional kdv equation. *Applied Sciences*, 8(1):42, 2018.
- [133] Yufeng Xu and Om P Agrawal. Numerical solutions and analysis of diffusion for new generalized fractional burgers equation. *Fract. Calc. Appl. Anal.*, 16(3):709–736, 2013.
- [134] Yufeng Xu, Zhimin He, and Qinwu Xu. Numerical solutions of fractional advection–diffusion equations with a kind of new generalized fractional derivative. *Int. J. Comput. Math.*, 91(3):588–600, 2014.

List of Published and Communicated Papers

The following research articles are published or communicated.

1. Sarita Kumari and Rajesh K. Pandey, Single-term and multi-term nonuniform time-stepping approximation methods for two-dimensional time-fractional diffusion-wave equation, **Computers and Mathematics with Applications** 151 (2023), 359-383.
2. Sarita Kumari and Rajesh K. Pandey, Alternating direction implicit approach for the two-dimensional time fractional nonlinear Klein–Gordon and Sine–Gordon problems, **Communications in Nonlinear Science and Numerical Simulation** 130 (2024), 107769.
3. Sarita Kumari, Rajesh K. Pandey, and Ravi P Agarwal, High-Order Approximation to Generalized Caputo Derivatives and Generalized Fractional Advection–Diffusion Equations, **Mathematics** 2023, 11(5), 1200.
4. Deeksha Singh, Rajesh K. Pandey, Sarita Kumari, A fourth order accurate numerical method for non-linear time fractional reaction–diffusion equation on a bounded domain, **Physica D: Nonlinear Phenomena** 449 (2023), 133742.
5. Sarita Kumari and Rajesh K. Pandey, An efficient temporal approximation for weakly singular time-fractional nonlinear diffusion-wave equation with variable coefficients, **Numerical Algorithm (Revision Submitted)**.
6. Sarita Kumari and Rajesh K. Pandey, A temporal difference scheme on nonuniform meshes for nonlinear time-delay fractional diffusion-wave equation with nonsmooth initial data, **(Communicated)**.

-
7. Riya Kumari Burman, Sarita Kumari and Rajesh K. Pandey, Compact difference approximation method for solving two-dimensional time-fractional diffusion-wave equation, (**Communicated**).