



Colegio de San Juan de Letran
Dominican Avenue, Abucay, Bataan
Library and Media Services

RESEARCH GUIDE: DIFFERENTIAL EQUATIONS

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RESEARCH GUIDES

DIFFERENTIAL EQUATIONS

I. SCOPE NOTE

Differential equation is an equation for a function containing derivatives of that function.
math.ust.hk

II. SEARCH AIDS (BT: Broader Term, RT: Related Term, NT: Narrow Term)

BT:

- Numerical Methods

RT:

- Equation
- Euler method
- Partial differential equation
- First order DE
- Separable first order equation
- First degree DE
- Linear first order DE
- Application for first order DE
- Solution of first order
- Homogeneous linear DE
- Nonhomogeneous linear DE
- Newton's law of cooling
- Differential operators
- Bernoulli differential equation
- Principle of superposition

NT:

- Decomposition (Growth)
- Mixing (Non-reactive fluids)
- Linear independence
- Ordinary differential equation (ODE)
- Partial differential equation (PDE)
- Differential-algebraic equation (DAE)
- Order
- Linearity
- Degree
- Constant coefficient
- Undetermined coefficient
- Variations of parameters
- Auxiliary equation

- Variable separable
- Equations of linear function

III. INFORMATION RESOURCES

A. LIBRARY RESOURCES

Note: For the appropriate access credentials, please contact the Letran Bataan Library

➤ E-JOURNALS

- Differential Equations. https://www.proquest.com/publication/publications_54032
- Advances in Difference Equations. https://www.proquest.com/publication/publications_237355
- The American Mathematical Monthly. https://www.proquest.com/publication/publications_47349
- International Journal of Education and Management Engineering. https://www.proquest.com/publication/publications_2069183
- Applied Mechanics and Materials. https://www.proquest.com/publication/publications_2029177
- International Journal of Science, Engineering & Computer Technology. https://search.proquest.com/central/publication/publications_2032130
- Computational Mathematics & Mathematical Physics. https://search.proquest.com/central/publication/publications_60276
- SIAM Journal on Numerical Analysis. https://search.proquest.com/central/publication/publications_666303
- Communication in Mathematics & Statistics. https://search.proquest.com/central/publication/publications_2043942
- SIAM Journal on Applied Mathematics. https://search.proquest.com/central/publication/publications_666314

➤ E-THESES

- Bai, Y. (2020). Analysis and applications of Caputo fractional impulsive differential equations and Caputo fractional sub hyperbolic dynamic equations (Order No. 27959647). Available from ProQuest Central. (2550676979). Retrieved from <https://www.proquest.com/dissertations-theses/analysis-applications-caputo-fractional-impulsive/docview/2550676979/se-2?accountid=190548>
- Xiang, R. (2020). Efficient and robust shape correspondence methods (Order No. 27962256). Available from ProQuest Central. (2428027932). Retrieved from <https://www.proquest.com/dissertations-theses/efficient-robust-shape-correspondence-methods/docview/2428027932/se-2?accountid=190548>
- Crandall, J. W. (2019). Investigating accuracy of the reconfigurable optical computer (ROC) in metatronics for solving partial differential equations (Order No. 13864207). Available from ProQuest Central. (2217883485). Retrieved from

<https://www.proquest.com/dissertations-theses/investigating-accuracy-reconfigurable-optical/docview/2217883485/se-2?accountid=190548>

- Sun, C. (2019). Stable up-downwind finite difference methods for solving Heston stochastic volatility equations (Order No. 22583536). Available from ProQuest Central. (2305947432). Retrieved from <https://www.proquest.com/dissertations-theses/stable-up-downwind-finite-difference-methods/docview/2305947432/se-2?accountid=190548>
- Dela, M. D. (2019). An investigation of forward-backward stochastic differential equations and ranked-based diffusions (Order No. 13811686). Available from ProQuest Central. (2218675587). Retrieved from <https://www.proquest.com/dissertations-theses/investigation-forward-backward-stochastic/docview/2218675587/se-2?accountid=190548>
- Drazin, P. L. (2017). Modeling and analysis of elements in structural mechanics (Order No. 10276506). Available from ProQuest Central. (1918975212). Retrieved from <https://www.proquest.com/dissertations-theses/modeling-analysis-elements-structural-mechanics/docview/1918975212/se-2?accountid=190548>
- Schmid, M. J. A. (2017). A new control paradigm for stochastic differential equations (Order No. 10285670). Available from ProQuest Central. (1925940069). Retrieved from <https://www.proquest.com/dissertations-theses/new-control-paradigm-stochastic-differential/docview/1925940069/se-2?accountid=190548>
- Otomo, H. (2019). Lattice-boltzmann models for high-order partial differential equations (Order No. 13814332). Available from ProQuest Central. (2245958052). Retrieved from <https://search.proquest.com/docview/2245958052?accountid=190548>
- Schmid, M. J. A. (2017). A new control paradigm for stochastic differential equations (Order No. 10285670). Available from ProQuest Central. (1925940069). Retrieved from <https://search.proquest.com/docview/1925940069?accountid=190548>
- Sambandham, B. (2016). Analysis of sequential caputo fractional differential equations with applications (Order No. 10163318). Available from ProQuest Central. (1847568708). Retrieved from <https://search.proquest.com/docview/1847568708?accountid=190548>
- Zhou, Z. (2016). Statistical inference of distributed delay differential equations (Order No. 10181821). Available from ProQuest Central. (1834315307). Retrieved from <https://search.proquest.com/docview/1834315307?accountid=190548>
- Gomez Henao, A. (2013). Uniqueness properties in the theory of stochastic differential equations (Order No. 3555025). Available from ProQuest Central. (1318619584). Retrieved from <https://search.proquest.com/docview/1318619584?accountid=190548>

B. OPEN ACCESS

➤ FREE E-BOOKS

- Olver, Peter J. (2014). Introduction to Partial Differential Equations. Switzerland: Springer International Publishing. <https://www.pdfdrive.com/introduction-to-partial-differential-equations-e25964678.html>
- Hillen, T., Leonard, I.E., Van Roessel, H. (2012). Partial Differential Equations: Theory and Completely Solved Problems. Hoboken, NJ: John Wiley & Sons.

- <https://www.pdfdrive.com/partial-differential-equations-theory-and-completely-solved-problems-d177198330.html>
- Adkins, William A., Davidson, Mark G. (2012). Ordinary Differential Equation. New York: Springer Science+Business Media. <https://www.pdfdrive.com/ordinary-differential-equation-e33499538.html>
 - Cain, John W. & Reynolds, Angela (2010). Ordinary and Partial Differential Equations: An Introduction into Dynamical Systems. (n.p.). <https://www.pdfdrive.com/ordinary-and-partial-differential-equations-e568347.html>
 - Chipot, M., Quittner, P. (Eds.) (2005). Handbook of Differential Equations: Stationary Partial Differential Equation. Volume II. Amsterdam: Elsevier. <https://www.pdfdrive.com/handbook-of-differential-equationsstationary-partial-differential-equations-volume-2-handbook-of-differential-equations-stationary-partial-differential-equations-e158599582.html>
 - Finizio, N. & Ladas, G. (1982). An Introduction to Differential Equations with Difference Equations, Fourier Series and Partial Differential Equations. Belmont, CA: Wadsworth. <https://www.pdfdrive.com/an-introduction-to-differential-equations-with-difference-equations-fourier-series-and-partial-differential-equations-e184076110.html>
 - Bronson, Richard. (2006). Schaum's Outline of Differential Equations. New York: McGraw Hill. <https://www.pdfdrive.com/schaums-outline-of-differential-equations-3rdedition-schaums-outline-series-d159141060.html>
 - Cañada, A. (2004). Handbook of Differential Equations Ordinary Differential Equations Volume I. North Holland: Elsevier. <https://www.pdfdrive.com/handbook-of-differentialequations-ordinary-differential-equations-volume-1-handbook-of-differentialequations-d184506092.html>

➤ **FREE E-JOURNALS**

- International Journal of Differential Equations. <https://www.hindawi.com/journals/ijde/>
- Electronic Journal of Differential Equations. <https://ejde.math.txstate.edu/>
- Journal of Dynamics & Differential Equations. <https://www.springer.com/journal/10884>

➤ **FREE E-THESES**

- Yang, Z. (2021). Two problems in elliptic partial differential equations arising from fluid dynamics and composite materials. (Doctoral Dissertation). Rutgers University. Retrieved from <https://rucore.libraries.rutgers.edu/rutgers-lib/66048/>
- Mohammadi, Z. (2019). Algorithms for mappings and symmetries of differential equations. (Thesis). University of Western Ontario. Retrieved from <https://ir.lib.uwo.ca/etd/6760>
- Tran, K. K. (2018). Mathematical techniques for the analysis of partial differential equations. (Masters Thesis). East Carolina University. Retrieved from <http://hdl.handle.net/10342/6745>
- Dowie, E. (2018). Rational solutions of nonlinear partial differential equations. (Doctoral Dissertation). University of Kent. Retrieved from <https://kar.kent.ac.uk/66565/>; <https://ethos.bl.uk/OrderDetails.do?uin=uk.bl.ethos.739518>

- Weymier, EJ (2018). Theoretical Analysis of Nonlinear Differential Equations. (Masters Thesis). Stephen F. Austin State University. Retrieved from <https://scholarworks.sfasu.edu/etds/145>
- Teymur, O. (2018). Topics in the probabilistic solution of ordinary differential equations. (Doctoral Dissertation). Imperial College London. Retrieved from <http://hdl.handle.net/10044/1/68408>
- Granström, F. (2017). Symmetry methods and some nonlinear differential equations: Background and illustrative examples. (Thesis). Karlstad University. Retrieved from <http://urn.kb.se/resolve?urn=urn:nbn:se:kau:diva-48020>
- Ying, N. M. (2017). Numerical methods for partial differential equations from interface problems. (Thesis). Hong Kong University of Science and Technology. Retrieved from <http://repository.ust.hk/Record/1783.1-91176> ; <https://doi.org/10.14711/thesis-991012564466603412> ; http://repository.ust.hk/ir/bitstream/1783.1-91176/1/th_redirect.html
- Kiria-Kaiserberg, V. (2016). Explosion properties of stochastic differential delay equations without drift. (Doctoral Dissertation). University of Rochester. Retrieved from <http://hdl.handle.net/1802/31482>
- McKenzie, R. (2016). Reducing the index of differential-algebraic equations by exploiting underlying structures. (Doctoral Dissertation). Cardiff University. Retrieved from <http://orca.cf.ac.uk/98040/>
- Dareiotis, A. C. (2015). Stochastic partial differential and integro-differential equations. (Doctoral Dissertation). University of Edinburgh. Retrieved from <http://hdl.handle.net/1842/14186>
- Taylor, P. (2014). Simulating Gaussian random fields and solving stochastic differential equations using bounded Wiener increments. (Doctoral Dissertation). University of Manchester. Retrieved from <http://ethos.bl.uk/OrderDetails.do?uin=uk.bl.ethos.603185>

C. PROFESSIONAL ORGANIZATIONS

- Philippine Council of Mathematics Teacher Educators ((MATHTED). <http://mathted.weebly.com/>
- Association of Mathematics Teachers Association. <https://amte.net/>
- American Mathematical Society. <http://www.ams.org/home/page>
- EQ World. <http://eqworld.ipmnet.ru/en/solutions/ode.htm>
- International Linear Algebra Society. <https://www.ilasic.org/>
- Wolfram Mathworld. <https://mathworld.wolfram.com/>

D. OTHER RELATED WEB PORTALS

- Paul's Online Notes. <https://tutorial.math.lamar.edu/classes/de/de.aspx>
- SOS Mathematics. <http://www.sosmath.com/diffeq/diffeq.html>

E. RELATED RESEARCH GUIDES

- St. Clair Community College. <https://esearch.sc4.edu/math/equations>
- Nova Southeastern University. <https://nsufl.libguides.com/cnso-diffeq>
- CCBC Library. <https://libraryguides.ccbcmd.edu/mathematics/differential>

- University of Maryland. <https://libguides.umgc.edu/mathematics>
- Illinois Library. <https://guides.library.illinois.edu/c.php?g=348487&p=2347836>

IV. TUTORIALS

- Differential Equations. <https://www.khanacademy.org/math/differential-equations/first-order-differential-equations>
- Differential Equations-Introduction, Order and Degree, Solutions to DE. <https://www.youtube.com/watch?v=hiL356Exelw>
- Differential Equations – Elimination of Arbitrary Constants. <https://www.youtube.com/watch?v=vw6fzRd-kvs>
- Differential Equations – Variable Separable DE Solved Problems. <https://www.youtube.com/watch?v=s0sgEQS-xSU>
- Laws of Growth and Decay, Application of First Order DE – Differential Equations. <https://www.youtube.com/watch?v=1HDRmEGdb9A>
- Math is Fun. <https://www.mathsisfun.com/calculus/differential-equations.html>
- Interactive Mathematics. <https://www.intmath.com/differential-equations/1-solving-des.php>
- Engineer 4 Free. <https://www.engineer4free.com/differential-equations.html>
- Math Tutor. <https://www.mathtutordvd.com/public/department139.cfm>

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