REFERENCES

Abbas, I., Saeed, T., and Alhothuali, M. (2021). Hyperbolic two-temperature photo-thermal interaction in a semiconductor medium with a cylindrical cavity. *Silicon*, 13(6):1871–1878.

Abbas, I. A. (2014). Three-phase lag model on thermoelastic interaction in an unbounded fiber-reinforced anisotropic medium with a cylindrical cavity. *J. Comput. Theor. Nanosci.*, 11(4):987–992.

Abbas, I. A. (2015). Analytical solution for a free vibration of a thermoelastic hollow sphere. *Mech. Based Des. Struct. Mach.*, 43(3):265–276.

Abbas, I. A. (2018). Free vibrations of nanoscale beam under two-temperature Green and Naghdi model. *Int. J. Acoust. Vib.*, 23(3):289–293.

Abbas, I. A. and Abd-alla, A. N. (2008). Effects of thermal relaxations on thermoelastic interactions in an infinite orthotropic elastic medium with a cylindrical cavity. *Arch. Appl. Mech.*, 78(4):283–293.

Abbas, I. A. and Alzahrani, F. S. (2018). A Green-Naghdi model in a 2D problem of a mode I crack in an isotropic thermoelastic plate. *Phys. Mesomech.*, 21(2):99–103.

Abbas, I. A. and Othman, M. I. A. (2009). Effect of rotation on thermoelastic waves with Green-Naghdi theory in a homogeneous isotropic hollow cylinder. *Int. J. Ind. Math.*, 1(2):121–134.

Abbas, I. A. and Youssef, H. M. (2009). Finite element analysis of two-temperature generalized magneto-thermoelasticity. *Arch. Appl. Mech.*, 79(10):917–925.

Abd-Alla, A. and Mahmoud, S. (2010). Magneto-thermoelastic problem in rotating non-homogeneous orthotropic hollow cylinder under the hyperbolic heat conduction model. *Meccanica*, 45(4):451–462.

Abd-alla, A.-E.-N. N., Alshaikh, F., Del Vescovo, D., and Spagnuolo, M. (2017). Plane waves and eigenfrequency study in a transversely isotropic magneto-thermoelastic medium under the effect of a constant angular velocity. *J. Therm. Stresses*, 40(9):1079–1092.

Abdallah, I. A. (2009). Dual phase lag heat conduction and thermoelastic properties of a semi-infinite medium induced by ultrashort pulsed laser. *Prog. Phys.*, 3(2009):60–63.

Abouelregal, A. (2020). On Green and Naghdi thermoelasticity model without energy dissipation with higher order time differential and phase-lags. *J. Appl. Comput. Mech.*, 6(3):445–456.

Abouelregal, A. E. (2011). Generalized thermoelasticity for an isotropic solid sphere in dual-phase-lag of heat transfer with surface heat flux. *Int. J. Comput. Methods Eng. Sci. Mech.*, 12(2):96–105.

Abouelregal, A. E. (2019). A novel generalized thermoelasticity with higher-order time-derivatives and three-phase lags. *Multidiscip. Model. Mater. Struct.*, 16(4):689–711.

Agarwal, V. K. (1978). On surface waves in generalized thermoelasticity. *J. Elast.*, 8(2):171–177.

Agarwal, V. K. (1979). On plane waves in generalized thermoelasticity. *Acta Mech.*, 31(3):185–198.

Ailawalia, P., Kumar, S., and Pathania, D. S. (2016). Internal heat source in thermoelastic microelongated solid under Green Lindsay theory. *J. Theor. Appl. Mech.*, 46(2):65.

Al-Huniti, N. S. and Al-Nimr, M. (2005). Dynamic thermoelastic response of a heated thin composite plate using the dual-phase-lag heat conduction model. *Heat Transf. Eng.*, 26(9):41–49.

Alzahrani, F. and Abbas, I. A. (2020a). Generalized thermoelastic interactions in a poroelastic material without energy dissipations. *Int. J. Thermophys.*, 41(7):1–13.

Alzahrani, F. S. and Abbas, I. A. (2020b). Fractional order GL model on thermoelastic interaction in porous media due to pulse heat flux. *Geomech. Eng.*, 23(3):217–225.

An, M., Song, Q., Yu, X., Meng, H., Ma, D., Li, R., Jin, Z., Huang, B., and Yang, N. (2017). Generalized two-temperature model for coupled phonons in nanosized graphene. *Nano lett.*, 17(9):5805–5810.

Anwar, M. N. and Sherief, H. H. (1988). State space approach to generalized thermoelasticity. *J. Therm. Stresses*, 11(4):353–365.

Anwar, M. N. and Sherief, H. H. (1994). Boundary integral equation formulation for thermoelasticity with two relaxation times. *J. Therm. Stresses*, 17(2):257–270.

Aouadi, M., Campo, M., Copetti, M., and Fernández, J. R. (2019). Analysis of a multidimensional thermoviscoelastic contact problem under the Green–Lindsay theory. *J. Comput. Appl. Math.*, 345:224–246.

Aouadi, M. and Moulahi, T. (2015). Optimal decay rate for unidimensional thermoelastic problem within the Green-Lindsay model. *J. Therm. Stresses*, 38(10):1199–1216.

Armstrong, B. (1984). Models for thermoelastic in heterogeneous solids attenuation of waves. *Geophysics*, 49(7):1032–1040.

Bagri, A. and Eslami, M. R. (2007a). Analysis of thermoelastic waves in functionally graded hollow spheres based on the Green-Lindsay theory. *J. Therm. Stresses*, 30(12):1175–1193.

Bagri, A. and Eslami, M. R. (2007b). A unified generalized thermoelasticity formulation; Application to thick functionally graded cylinders. *J. Therm. Stresses*, 30(9-10):911–930.

Bagri, A. and Eslami, M. R. (2008). Generalized coupled thermoelasticity of functionally graded annular disk considering the Lord–Shulman theory. *Compos. Struct.*, 83(2):168–179.

Bahtui, A. and Eslami, M. R. (2007). Generalized coupled thermoelasticity of functionally graded cylindrical shells. *Int. J. Numer. Methods Eng.*, 69(4):676–697.

Balla, M. (1989). Formulation of coupled problems of thermoelasticity by finite elements. *Period. Polytech. Mech. Eng.*, 33(1-2):59–70.

Banik, S. and Kanoria, M. (2011). Two-temperature generalized thermoelastic interactions in an infinite body with a spherical cavity. *Int. J. Thermophys.*, 32(6):1247–1270.

Barone, S. and Patterson, E. (1998). An alternative finite difference method for post-processing thermoelastic data using compatibility. *J. Strain Anal Eng. Des.*, 33(6):437–447.

Baumeister, K. J. and Hamill, T. D. (1969). Hyperbolic heat-conduction equation-A solution for the semi-infinite body problem. *J. Heat Transf.*, 91(4):543–548.

Baumeister, K. J. and Hamill, T. D. (1971). Discussion: "Hyperbolic heat-conduction equation-A solution for the semi-infinite body problem"(Baumeister, K. J., and Hamill, T. D., 1969, ASME J. Heat Transfer, 91, pp. 543–548). *J. Heat Transf.*, 93(1):126–127.

Bear, J., Sorek, S., Ben-Dor, G., and Mazor, G. (1992). Displacement waves in saturated thermoelastic porous media. I. Basic equations. *Fluid Dyn. Res.*, 9(4):155.

Bellman, R. E., Kalaba, R. E., and Lockett, J. A. (1966). *Numerical inversion of the Laplace transform: Applications to biology, economics, engineering and physics*. North-Holland.

Biot, M. A. (1956a). Theory of propagation of elastic waves in a fluid-saturated porous solid. ii. higher frequency range. *J. Acoust. Soc. Am.*, 28(2):179–191.

Biot, M. A. (1956b). Thermoelasticity and irreversible thermodynamics. *J. Appl. Phys.*, 27(3):240–253.

Biot, M. A. (1962a). Generalized theory of acoustic propagation in porous dissipative media. *J. Acoust. Soc. Am.*, 34(9A):1254–1264.

Biot, M. A. (1962b). Mechanics of deformation and acoustic propagation in porous media. *J. Appl. Phys.*, 33(4):1482–1498.

Biot, M. A. (1964). Theory of buckling of a porous slab and its thermoelastic analogy.

Biot, M. A. and Temple, G. (1972). Theory of finite deformations of porous solids. *Indiana Univ. Math. J.*, 21(7):597–620.

Birman, V. and Byrd, L. W. (2007). Modeling and analysis of functionally graded materials and structures. *Appl. Mech. Rev.*, 60(5):195–0216.

Biswas, S. (2019). Fundamental solution of steady oscillations for porous materials with dual-phase-lag model in micropolar thermoelasticity. *Mech. Based Des. Struct. Mach.*, 47(4):430–452.

Biswas, S., Mukhopadhyay, B., and Shaw, S. (2017). Rayleigh surface wave propagation in orthotropic thermoelastic solids under three-phase-lag model. *J. Therm. Stresses*, 40(4):403–419.

Boley, B. and Weiner, J. H. (1960). *Theory of thermal stresses*. John Wiley and Sons, New York.

Boley, B. A. (1980). Thermal stresses: A survey. In *Thermal Stresses in Severe Environments*, pages 1–11. Springer.

Boschi, E. and Ieşan, D. (1973). A generalized theory of linear micropolar thermoelasticity. *Meccanica*, 8(3):154–157.

Campo, M., Copetti, M. I., Fernández, J. R., and Quintanilla, R. (2021). On existence and numerical approximation in phase-lag thermoelasticity with two temperatures. *Discrete and Continuous Dynamical Systems-B*, 0.

Carcione, J. M., Cavallini, F., Wang, E., Ba, J., and Fu, L.-Y. (2019). Physics and simulation of wave propagation in linear thermoporoelastic media. *J. Geophys. Res. Solid Earth*, 124(8):8147–8166.

Cattaneo, C. (1958). A form of heat-conduction equations which eliminates the paradox of instantaneous propagation. *Compt. Rend.*, 247:431.

Chadwick, P. (1962). On the propagation of thermoelastic disturbances in thin plates and rods. *J. Mech. Phys. Solids*, 10(2):99–109.

Chakrabarti, S. (1973). Thermoelastic waves in non-simple media. *Pure Appl. Geophys.*, 109(1):1682.

Chan, S. H., Low, M. J. D., and Mueller, W. K. (1971). Hyperbolic heat conduction in catalytic supported crystallites. *AIChE J.*, 17(6):1499–1501.

Chandrasekharaiah, D. S. (1980). On generalised thermoelastic wave propagation. In *Proc. Indian Acad. Sci.-Math. Sci.*, volume 89, pages 43–52. Springer.

Chandrasekharaiah, D. S. (1986a). Heat-flux dependent micropolar thermoelasticity. *Int. J. Eng. Sci.*, 24(8):1389–1395.

Chandrasekharaiah, D. S. (1986b). Thermoelasticity with second sound: A review. *Appl. Mech. Rev.*, 39(3):355–376.

Chandrasekharaiah, D. S. (1996a). A note on the uniqueness of solution in the linear theory of thermoelasticity without energy dissipation. *J. Elast.*, 43(3):279–283.

Chandrasekharaiah, D. S. (1996b). One-dimensional wave propagation in the linear theory of thermoelasticity without energy dissipation. *J. Therm. Stresses*, 19:695–710.

Chandrasekharaiah, D. S. (1996c). A uniqueness theorem in the theory of thermoelasticity without energy dissipation. *J. Therm. Stresses*, 19(3):267–272.

Chandrasekharaiah, D. S. (1998). Hyperbolic thermoelasticity: A review of recent literature. *Appl. Mech. Rev.*, 51(12):705–729.

Chandrasekharaiah, D. S. and Murthy, H. N. (1991). Temperature-rate-dependent thermoelastic interactions due to a line heat source. *Acta Mech.*, 89(1-4):1–12.

Chandrasekharaiah, D. S. and Murthy, H. N. (1994). On a mixed problem for the temperature equation in generalized thermoelasticity. *Acta Mech.*, 104(1-2):105–114.

Chandrasekharaiah, D. S. and Srikantaiah, K. R. (1983). Some theorems in temperature-rate-dependent theory of thermoelasticity. *Proc. Math. Sci.*, 92(3):135–141.

Chandrasekharaiah, D. S. and Srikantiah, K. R. (1984). Thermoelastic plane waves in a rotating solid. *Acta Mech.*, 50(3-4):211–219.

Chandrasekharaiah, D. S. and Srikantiah, K. R. (1987). On temperature-rate dependent thermoelastic interactions in an infinite solid due to a point heat-source. *Indian J. Technol.*, 25(1):1–7.

Chandrasekharaiah, D. S. and Srinath, K. S. (1997a). Axisymmetric thermoelastic interactions without energy dissipation in an unbounded body with cylindrical cavity. *J. Elast.*, 46(1):19–31.

Chandrasekharaiah, D. S. and Srinath, K. S. (1997b). Thermoelastic plane waves without energy dissipation in a half-space due to time-dependent heating of the boundary. *J. Therm. Stresses*, 20(6):659–676.

Chandrasekharaiah, D. S. and Srinath, K. S. (1997c). Thermoelastic plane waves without energy dissipation in a rotating body. *Mech. Res. Commun.*, 24(5):551–560.

Chandrasekharaiah, D. S. and Srinath, K. S. (2000). Thermoelastic waves without energy dissipation in an unbounded body with a spherical cavity. *Int. J. Math. Math. Sci.*, 23(8):555–562.

Chatterjee, G. and Roychoudhuri, S. K. (1990). On spherically symmetric temperature-rate dependent thermoelastic wave propagation. *J. Math. Phys. Sci*, 24:251–264.

Chen, J. and Dargush, G. (1995). Boundary element method for dynamic poroelastic and thermoelastic analyses. *Int. J. Solids Struct.*, 32(15):2257–2278.

Chen, P. J. and Gurtin, M. E. (1968). On a theory of heat conduction involving two temperatures. *Z. Angew. Math. Phys.*, 19(4):614–627.

Chen, P. J. and Gurtin, M. E. (1970). On second sound in materials with memory. *Z. Angew. Math. Phys.*, 21(2):232–241.

Chen, P. J., Gurtin, M. E., and Williams, W. O. (1969). On the thermodynamics of non-simple elastic materials with two temperatures. *Z. Angew. Math. Phys.*, 20(1):107–112.

Chen, T.-C. and Weng, C.-I. (1988). Generalized coupled transient thermoelastic plane problems by Laplace transform/finite element method. *J. Appl. Mech.*, 55(2):377–382.

Cheng, A.-D. and Detournay, E. (1998). On singular integral equations and fundamental solutions of poroelasticity. *Int. J. Solids. Struct.*, 35(34-35):4521–4555.

Cheng, A. H.-D. and Predeleanu, M. (1987). Transient boundary element formulation for linear poroelasticity. *Appl. Math. Model.*, 11(4):285–290.

Chester, M. (1963). Second sound in solids. *Phys. Rev.*, 131(5):2013–2015.

Chester, M. (1966). High-frequency thermometry. *Phys. Rev.*, 145(1):76–80.

Chirilă, A., Marin, M., and Montanaro, A. (2021). Well-posedness for thermo-electro-viscoelasticity of Green–Naghdi type. *Contin. Mech. Thermodyn.*, pages 1–22.

Chiriţă, S. and Ciarletta, M. (2010). Reciprocal and variational principles in linear thermoelasticity without energy dissipation. *Mech. Res. Commun.*, 37(3):271–275.

Choudhuri, S. R. (1985). Effect of rotation and relaxation times on plane waves in generalised thermo-elasticity. *J. Elast.*, 15(1):59–68.

Chyr, I. A. and Shynkarenko, H. A. (2017). Well-posedness of the Green–Lindsay variational problem of dynamic thermoelasticity. *J. Math. Sci.*, 226(1):11–27.

Ciarletta, M. (1999). A theory of micropolar thermoelasticity without energy dissipation. *J. Therm. Stresses*, 22(6):581–594.

Ciarletta, M., Scalia, A., and Svanadze, M. (2007). Fundamental solution in the theory of micropolar thermoelasticity for materials with voids. *J. Therm. Stresses*, 30(3):213–229.

Colton, D. and Wimp, J. (1979). Asymptotic behaviour of the fundamental solution to the equation of heat conduction in two temperatures. *J. Math. Anal. Appl.*, 69(2):411–418.

Cowin, S. C. and Nunziato, J. W. (1983). Linear elastic materials with voids. *J. Elast.*, 13(2):125–147.

Dai, H.-L., Rao, Y.-N., and Dai, T. (2016). A review of recent researches on FGM cylindrical structures under coupled physical interactions, 2000–2015. *Compos. Struct.*, 152:199–225.

Darabseh, T., Yilmaz, N., and Bataineh, M. (2012). Transient thermoelasticity analysis of functionally graded thick hollow cylinder based on Green–Lindsay model. *Int. J. Mech. Mater.*, 8(3):247–255.

Dargush, G. and Banerjee, P. (1991). A boundary element method for axisymmetric soil consolidation. *Int. J. Solids Struct.*, 28(7):897–915.

Darrall, B. T. and Dargush, G. F. (2018). Variational principle and time-space finite element method for dynamic thermoelasticity based on mixed convolved action. *Eur. J. Mech. A Solids*, 71:351–364.

Das, B. (2017). *Problems and Solutions in Thermoelasticity and Magneto-thermoelasticity*, volume 14. Springer.

Delves, L. M. and Mohamed, J. L. (1985). *Computational methods for integral equations*. Cambridge University Press.

Deng, C., Huang, Y., An, M., and Yang, N. (2020). Phonon weak couplings model and its applications: A revisit to two-temperature non-equilibrium transport. *Mater. Today Phys.*, 16:100305.

Dhaliwal, R. S., Majumdar, S. R., and Wang, J. (1997). Thermoelastic waves in an infinite solid caused by a line heat source. *Int. J. Math. Math. Sci.*, 20(2):323–334.

Dhaliwal, R. S. and Rokne, J. G. (1989). One-dimensional thermal shock problem with two relaxation times. *J. Therm. Stresses*, 12(2):259–279.

Dhaliwal, R. S. and Sherief, H. H. (1980). Generalized thermoelasticity for anisotropic media. *Q. Appl. Math.*, 38(1):1–8.

Dost, S. and Tabarrok, B. (1978). Generalized micropolar thermoelasticity. *Int. J. Eng. Sci.*, 16(3):173–183.

Dreher, M., Quintanilla, R., and Racke, R. (2009). Ill-posed problems in thermomechanics. *Appl. Math. Lett.*, 22(9):1374–1379.

Duhamel, J. M. C. (1836). Mémoire sur le calcul des actions moléculaires développées par les changements de température dans les corps solides. *Acad. Sci. Paris.*

Duhamel, J. M. C. (1837). Second memoire sur les phenomenes thermo-mecaniques. *J. Ec. Polytech. (Paris)*, 15(25):1–57.

El-Attar, S. I., Hendy, M. H., and Ezzat, M. A. (2019). On phase-lag Green–Naghdi theory without energy dissipation for electro-thermoelasticity including heat sources. *Mech. Based Des. Struct. Mach.*, 47(6):769–786.

El-Karamany, A. S. and Ezzat, M. A. (2011a). Convolutional variational principle, reciprocal and uniqueness theorems in linear fractional two-temperature thermoelasticity. *J. Therm. Stresses*, 34(3):264–284.

El-Karamany, A. S. and Ezzat, M. A. (2011b). On the two-temperature Green–Naghdi thermoelasticity theories. *J. Therm. Stresses*, 34(12):1207–1226.

El-Karamany, A. S. and Ezzat, M. A. (2013). On the three-phase-lag linear micropolar thermoelasticity theory. *Eur. J. Mech. A. Solids.*, 40:198–208.

El-Karamany, A. S. and Ezzat, M. A. (2014). On the dual-phase-lag thermoelasticity theory. *Meccanica*, 49(1):79–89.

El-Maghraby, N. M. (2005). A two-dimensional problem for a thick plate with heat sources in generalized thermoelasticity. *J. Therm. Stresses*, 28(12):1227–1241.

Emin, A. N., Florea, O. A., and Crăciun, E. M. (2021). Some uniqueness results for thermoelastic materials with double porosity structure. *Contin. Mech. Thermodyn.*, 33:1083–1106.

Eringen, A. C. (1970). *Foundations of micropolar thermoelasticity*. Springer,Berlin.

Ezzat, M. and Ezzat, S. (2016). Fractional thermoelasticity applications for porous asphaltic materials. *Pet. Sci.*, 13(3):550–560.

Ezzat, M. A. and Awad, E. S. (2010). Constitutive relations, uniqueness of solution, and thermal shock application in the linear theory of micropolar generalized thermoelasticity involving two temperatures. *J. Therm. Stresses*, 33(3):226–250.

Ezzat, M. A. and El-Bary, A. A. (2017). Application of fractional order theory of magneto-thermoelasticity to an infinite perfect conducting body with a cylindrical cavity. *Microsyst. Technol.*, 23(7):2447–2458.

Ezzat, M. A., El-Bary, A. A., and El-Karamany, A. S. (2009). Two-temperature theory in generalized magneto-thermo-viscoelasticity. *Can. J. Phys.*, 87(4):329–336.

Ezzat, M. A. and El-Karamany, A. S. (2002). The uniqueness and reciprocity theorems for generalized thermoviscoelasticity for anisotropic media. *J. Therm. Stresses*, 25(6):507–522.

Ezzat, M. A., El-Karamany, A. S., and El-Bary, A. A. (2018). Two-temperature theory in Green–Naghdi thermoelasticity with fractional phase-lag heat transfer. *Microsyst. Technol.*, 24(2):951–961.

Filopoulos, S., Papathanasiou, T., Markolefas, S., and Tsamasphyros, G. (2014). Generalized thermoelastic models for linear elastic materials with micro-structure part i: Enhanced Green–Lindsay model. *J. Therm. Stresses*, 37(5):624–641.

Fourie, J. and Du Plessis, J. (2003). A two-equation model for heat conduction in porous media I: theory). *Transp. Porous Media*, 53(2):145–161.

Fox, N. (1969). Generalised thermoelasticity. *Int. J. Eng. Sci.*, 7(4):437–445.

Francis, P. H. (1972). Thermo-mechanical effects in elastic wave propagation: A survey. *J. Sound Vib.*, 21(2):181–192.

Fu, L. (2012). Evaluation of sweet spot and geopressure in Xihu. Technical report, Sag. Tech Report, CCL2012-SHPS-0018ADM. Key laboratory of petroleum resource.

Fukui, Y. (1991). Fundamental investigation of functionally gradient material manufacturing system using centrifugal force. *JSME journal. Ser. 3, Vibration, control engineering, engineering for industry*, 34(1):144–148.

Ghassemi, A. and Diek, A. (2002). Porothermoelasticity for swelling shales. *J. Pet. Sci. Eng.*, 34(1-4):123–135.

Ghazanfarian, J. and Abbassi, A. (2009). Effect of boundary phonon scattering on dual-phase-lag model to simulate micro-and nano-scale heat conduction. *Int. J. Heat Mass Transf.*, 52(15-16):3706–3711.

Gladysz, J. (1985). Convolutional variational principles for thermoelasticity with finite wave speeds. *J. Therm. Stresses*, 8(2):205–226.

Gonsovskii, V. and Rossikhin, I. A. (1974). On acceleration waves in anisotropic thermoelastic media taking account of finiteness of the heat propagation velocity: Pmm vol. 38, n= 6, 1974, pp. 1098–1104. *J. Appl. Math. Mech.*, 38(6):1040–1046.

Goodman, T. R. (1964). Application of integral methods to transient nonlinear heat transfer. In *Advances in heat transfer*, volume 1, pages 51–122. Elsevier.

Green, A. (1972). A note on linear thermoelasticity. *Mathematika*, 19(1):69–75.

Green, A. E. and Laws, N. (1972). On the entropy production inequality. *Arch. Ration. Mech. Anal.*, 45(1):47–53.

Green, A. E. and Lindsay, K. A. (1972). Thermoelasticity. *J. Elast.*, 2(1):1–7.

Green, A. E. and Naghdi, P. M. (1991). A re-examination of the basic postulates of thermomechanics. *Proc. R. Soc. Lond. A.*, 432(1885):171–194.

Green, A. E. and Naghdi, P. M. (1992). On undamped heat waves in an elastic solid.

J. Therm. Stresses, 15(2):253–264.

Green, A. E. and Naghdi, P. M. (1993). Thermoelasticity without energy dissipation. *J. Elast.*, 31(3):189–208.

Griffith, A. A. (1921). VI. The phenomena of rupture and flow in solids. *Philos. Trans. R. Soc. London Ser. A*, 221(582-593):163–198.

Guo, Y. and Xiong, C. (2021). Influence of the viscoelastic relaxation time on a foundation under generalized poro-thermoelasticity. *Waves Random Complex Media*, 0(0):1–31.

Guo, Y., Xiong, C., and Zhu, H. (2019). Dynamic response of coupled thermo-hydro-elastodynamic problem for saturated foundation under GL generalized thermoelasticity. *J. Porous Media*, 22(13):1651–1666.

Gupta, M. and Mukhopadhyay, S. (2019a). Galerkin-type solution for the theory of strain and temperature rate-dependent thermoelasticity. *Acta Mech.*, 230(10):3633–3643.

Gupta, M. and Mukhopadhyay, S. (2019b). A study on generalized thermoelasticity theory based on non-local heat conduction model with dual-phase-lag. *J. Therm. Stresses*, 42(9):1123–1135.

Gupta, M. and Mukhopadhyay, S. (2020). Analysis of harmonic plane wave propagation predicted by strain and temperature-rate-dependent thermoelastic model. *Waves Random Complex Media*, 0(0):1–18.

Gurtin, M. E. and Williams, W. O. (1966). On the Clausius-Duhem inequality. *Z. Angew. Math. Phys.*, 77:626–633.

Hasanpour, K. and Mirzaei, D. (2018). A fast meshfree technique for the coupled thermoelasticity problem. *Acta Mech.*, 229(6).

He, J.-H. (2005). A generalized variational principle in micromorphic thermoelasticity. *Mech. Res. Commun.*, 32(1):93–98.

Hendy, M. H., El-Attar, S. I., and Ezzat, M. A. (2021). Two-temperature fractional Green–Naghdi of type III in magneto-thermo-viscoelasticity theory subjected to a moving heat source. *Indian J. Phys.*, 95(4):657–671.

Hetnarski, R. B. (1961). Coupled one-dimensional thermal shock problem for small times. *Arch. Mech. Stosow*, 13:295–306.

Hetnarski, R. B. (1964). The fundamental solution of the coupled thermo elastic problem for small times. *Arch. Mech.*, 16:23–31.

Hetnarski, R. B. and Eslami, M. R. (2009). *Thermal Stresses in Beams*. Springer.

Hetnarski, R. B., Eslami, M. R., and Gladwell, G. M. L. (2009). *Thermal stresses:*

Advanced theory and applications, volume 41. Springer, Netherlands.

Hetnarski, R. B. and Ignaczak, J. (1993). Generalized thermoelasticity: Closed-form solutions. *J. Therm. Stresses*, 16(4):473–498.

Hetnarski, R. B. and Ignaczak, J. (1999). Generalized thermoelasticity. *J. Therm. Stresses*, 22(4-5):451–476.

Honig, G. and Hirdes, U. (1984). A method for the numerical inversion of Laplace transforms. *J. Comput. Appl. Math.*, 10(1):113–132.

Horgan, C. O. and Quintanilla, R. (2005). Spatial behaviour of solutions of the dual-phase-lag heat equation. *Math. Methods Appl. Sci.*, 28(1):43–57.

Hosseini, S. M. (2009). Coupled thermoelasticity and second sound in finite length functionally graded thick hollow cylinders (without energy dissipation). *Mater. Des.*, 30(6):2011–2023.

Hosseini-Tehrani, P. and Eslami, M. (2000). BEM analysis of thermal and mechanical shock in a two-dimensional finite domain considering coupled thermoelasticity. *Eng. Anal. Bound. Elem.*, 24(3):249–257.

Ieşan, D. (1970). On the thermodynamics of non-simple elastic materials with two temperatures. *Z. Angew. Math. Phys.*, 21:583–591.

Ieşan, D. (1994). On the stability of motions of thermoelastic fluids. *J. Therm. Stresses*, 17(3):409–418.

Ieşan, D. (1998). On the theory of thermoelasticity without energy dissipation. *J. Therm. Stresses*, 21(3-4):295–307.

Ieşan, D. and Quintanilla, R. (2014). On a theory of thermoelastic materials with a double porosity structure. *J. Therm. Stresses*, 37(9):1017–1036.

Ignaczak, J. (1963). A completeness problem for stress equations of motion in the linear elasticity theory. *Arch. Mech. Stos*, 15(2):225–234.

Ignaczak, J. (1978a). Decomposition theorem for thermoelasticity with finite wave speeds. *J. Therm. Stresses*, 1(1):41–52.

Ignaczak, J. (1978b). Domain of influence theorem in linear thermoelasticity. *Int. J. Eng. Sci.*, 16(2):139–145.

Ignaczak, J. (1979). Uniqueness in generalized thermoelasticity. *J. Therm. Stresses*, 2(2):171–175.

Ignaczak, J. (1980). Thermoelasticity with finite wave speeds-A survey. In *Thermal Stresses in Severe Environments*, pages 15–30. Springer.

Ignaczak, J. (1985). A strong discontinuity wave in thermoelasticity with relaxation times. *J. Therm. Stresses*, 8(1):25–40.

Ignaczak, J. and Mr´owka Matejewska, E. B. (1990). One-dimensional Green's function in temperature-rate dependent thermoelasticity. *J. Therm. Stresses*, 13(3):281–296.

Ignaczak, J. and Ostoja-Starzewski, M. (2010). *Thermoelasticity with finite wave speeds*. Oxford University Press.

Iovane, G. and Passarella, F. (2004). Saint-Venant's principle in dynamic porous thermoelastic media with memory for heat flux. *J. Therm. Stresses*, 27(11):983–999.

Irgens, F. (2008). *Continuum mechanics*. Springer Science & Business Media.

Irwin, G. R. (1962). Crack-extension force for a part-through crack in a plate. *J. Appl. Mech.*, 29(4):651–654.

Jacquey, A. B., Cacace, M., Blöcher, G., and Scheck-Wenderoth, M. (2015). Numerical investigation of thermoelastic effects on fault slip tendency during injection and production of geothermal fluids. *Energy Procedia*, 76:311–320.

Jahangir, A., Atwa, S., Rehman, N., Usman, M., Ashraf, M. B., and Muhammad, N. (2020). Diffusion effect on plane harmonic waves through thermoelastic microstretch medium in context of Green–Naghdi theory. *Indian J. Phys.*, 94(7):987–998.

Jeffreys, H. (1930). The thermodynamics of an elastic solid. In *Math. Proc. Camb. Philos. Soc.*, volume 26, pages 101–106. Cambridge University Press.

Joseph, D. D. and Preziosi, L. (1989). Heat waves. *Rev. Mod. Phys.*, 61(1):41 – 73.

Joseph, D. D. and Preziosi, L. (1990). Heat waves: Addendum. *Rev. Mod. Phys*, 62:375–391.

Joule, J. P. and Thomson, W. (1857). XXII. On the thermal effects of longitudinal compression of solids. and On the alterations of temperature accompanying changes of pressure in fluids. *Proc. R. Soc. Lond. A.*, 8:564–569.

Kant, S. (2018). *Study on non-Fourier heat conduction models for coupled thermomechanical problems*. PhD thesis, Indian institute of technology (BHU), Varanasi, India.

Kant, S., Gupta, M., Shivay, O. N., and Mukhopadhyay, S. (2018). An investigation on a two-dimensional problem of mode-I crack in a thermoelastic medium. *Z. Angew. Math. Phys.*, 69(2):1–23.

Kar, A. and Kanoria, M. (2009). Generalized thermoelastic functionally graded orthotropic hollow sphere under thermal shock with three-phase-lag effect. *Eur. J. Mech. A. Solids.*, 28(4):757–767.

Kaur, I. and Lata, P. (2019). Effect of hall current on propagation of plane wave in transversely isotropic thermoelastic medium with two temperature and fractional order heat transfer. *SN Appl. Sci.*, 1(8):1–16.

Kaushal, S., Kumar, R., and Miglani, A. (2010). Response of frequency domain in generalized thermoelasticity with two temperatures. *J. Eng. Phys. Thermophys.*, 83(5):1080–1088.

Kothari, S. (2013). *Some aspects of generalized thermoelasticity and thermoelastic diffusion*. PhD thesis, Indian institute of technology (BHU), Varanasi, India.

Kothari, S., Kumar, R., and Mukhopadhyay, S. (2010). On the fundamental solutions of generalized thermoelasticity with three phase-lags. *J. Therm. Stresses*, 33(11):1035–1048.

Kothari, S. and Mukhopadhyay, S. (2013). Study of a problem of functionally graded hollow disk under different thermoelasticity theories–an analysis of phase-lag effects. *Comput. Math. with Appl.*, 66(7):1306–1321.

Kumar, A. (2018). *Modeling on coupled thermo-mechanics for homogeneous and non-homogenous elstic medium*. PhD thesis, Indian institute of technology (BHU), Varanasi, India.

Kumar, A., Kant, S., and Mukhopadhyay, S. (2017). An in-depth investigation on plane harmonic waves under two-temperature thermoelasticity with two relaxation parameters. *Math. Mech. Solids*, 22(2):191–209.

Kumar, A. and Kumar, R. (2015). A domain of influence theorem for thermoelasticity with three-phase-lag model. *J. Therm. Stresses*, 38(7):744–755.

Kumar, H. and Mukhopadhyay, S. (2020). Thermoelastic damping analysis for size-dependent microplate resonators utilizing the modified couple stress theory and the three-phase-lag heat conduction model. *Int. J. Heat Mass Transf.*, 148:118997.

Kumar, R. (2010). *Study of some problems under generalized thermoelasticity and thermoelasticity with two temperatures*. PhD thesis, Institute of Technology (BHU), Varanasi, India.

Kumar, R. and Chawla, V. (2011). A study of plane wave propagation in anisotropic three-phase-lag and two-phase-lag model. *Int. Commun. Heat Mass*, 38(9):1262–1268.

Kumar, R., Kumar, A., and Mukhopadhyay, S. (2016). An investigation on thermoelastic interactions under two-temperature thermoelasticity with two relaxation parameters. *Math. Mech. Solids*, 21(6):725–736.

Kumar, R. and Mukhopadhyay, S. (2009). Effects of three phase lags on generalized thermoelasticity for an infinite medium with a cylindrical cavity. *J. Therm. Stresses*, 32(11):1149–1165.

Kumar, R. and Mukhopadhyay, S. (2010a). Analysis of the effects of phase-lags on propagation of harmonic plane waves in thermoelastic media. *Comp. Methods Sci.*

Technol., 16(1):19–28.

Kumar, R. and Mukhopadhyay, S. (2010b). Effects of thermal relaxation time on plane wave propagation under two-temperature thermoelasticity. *Int. J. Eng. Sci.*, 48(2):128–139.

Kumar, R., Prasad, R., and Mukhopadhyay, S. (2010). Variational and reciprocal principles in two-temperature generalized thermoelasticity. *J. Therm. Stresses*, 33(3):161–171.

Kumari, B. (2017). *Investigation on some recent non-Fourier heat conduction models for coupled dynamical thermo-mechanical problems*. PhD thesis, Indian institute of technology (BHU), Varanasi, India.

Kumari, S. and Singh, B. (2019). Effects of two-temperature on rayleigh wave in generalized magneto-thermoelastic media with hydrostatic initial stress. *J. Heat Transfer*, 141(7):072002.

Kurashige, M. (1989). A thermoelastic theory of fluid-filled porous materials. *Int. J. Solids Struct.*, 25(9):1039–1052.

Landau, L. (1941). Theory of the superfluidity of Helium II. *Phys. Rev.*, 60(4):356.

Lebon, G. (1980). Variational principles in thermomechanics. *Recent Devel. Thermomech. Solids*, 282:221–415.

Lee, Z.-Y., Chen, C.-K., and Hung, C.-I. (2001). Transient thermal stress analysis of multilayered hollow cylinder. *Acta Mech.*, 151(1):75–88.

Leseduarte, M. C. and Quintanilla, R. (2018). Spatial behavior in high-order partial differential equations. *Math. Methods Appl. Sci.*, 41(6):2480–2493.

Lessen, M. (1957). The motion of a thermoelastic solid. *Q. Appl. Math.*, 15(1):105–108.

Lessen, M. (1959). Thermoelastic waves and thermal shock. *J. Mech. Phys. Solids*, 7(2):77–84.

Levy, A., Sorek, S., Ben-Dor, G., and Bear, J. (1995). Evolution of the balance equations in saturated thermoelastic porous media following abrupt simultaneous changes in pressure and temperature. *Transp. Porous Media*, 21(3):241–268.

Lindsay, K. and Straughan, B. (1979). Propagation of mechanical and temperature acceleration waves in thermoelastic materials. *Z. Angew. Math. Phys.*, 30(3):477–490.

Liu, P. and He, T. (2020). Dynamic response of thermoelastic materials with voids subjected to ramp-type heating under three-phase-lag thermoelasticity. *Mech. Adv. Mater. Struct.*, 0(0):1–9.

Liu, W. and Chen, M. (2017). Well-posedness and exponential decay for a porous thermoelastic system with second sound and a time-varying delay term in the internal feedback. *Contin. Mech. Thermodyn.*, 29(3):731–746.

Liu, Z. and Quintanilla de Latorre, R. (2018). Time decay in dual-phase-lag thermoelasticity: critical case. *Commun. Pure Appl. Anal.*, 17(1):177–190.

Lord, H. W. and Lopez, A. A. (1970). Wave propagation in thermoelastic solids at very low temperature. *Acta Mech.*, 10(1-2):85–98.

Lord, H. W. and Shulman, Y. (1967). A generalized dynamical theory of thermoelasticity. *J. Mech. Phys. Solids*, 15(5):299–309.

Lotfy, K. (2012). Mode-I crack in a two-dimensional fibre-reinforced generalized thermoelastic problem. *Chin. Phys. B*, 21(1):014209.

Lotfy, K. (2021). Effect of variable thermal conductivity and rotation of semiconductor elastic medium through two-temperature photothermal excitation. *Waves Random Complex Media*, 31(2):372–388.

Lotfy, K. and Yahia, Y. (2013). Effect of magnetic field and a mode-I crack 3D-problem in micropolar thermoelastic cubic medium possessing under three theories. *J. Solid Mech.*, 5(3):253–269.

Magana, A. and Quintanilla, R. (2009). Uniqueness and growth of solutions in two-temperature generalized thermoelastic theories. *Math. Mech. Solids*, 14(7):622–634.

Magana, A. and Quintanilla, R. (2018). On the existence and uniqueness in phase-lag thermoelasticity. *Meccanica*, 53(1-2):125–134.

Magaña Nieto, A., Muñoz Rivera, J. E., Naso, M. G., and Quintanilla de Latorre, R. (2018). Qualitative results for a mixture of Green-Lindsay thermoelastic solids. *Chaotic Model. Simul.*, (3):285–294.

Mallik, S. H. and Kanoria, M. (2008). A two dimensional problem for a transversely isotropic generalized thermoelastic thick plate with spatially varying heat source. *Eur. J. Mech. A. Solids.*, 27(4):607–621.

Mandal, B. M. and Mandal, M. (1999). *Advances in dual integral equations.* Chapman and Hall/CRC, Boca Raton FC.

Mandal, S. and Pal, S. (2021). On piezoelectric effect based on Green–Lindsay theory of thermoelasticity. *Waves Random Complex Media*, 0(0):1–12.

Marin, M., Craciun, E. M., and Pop, N. (2020a). Some results in Green–Lindsay thermoelasticity of bodies with dipolar structure. *Mathematics*, 8(4):497.

Marin, M. and Nicaise, S. (2016). Existence and stability results for thermoelastic dipolar bodies with double porosity. *Contin. Mech. Thermodyn.*, 28(6):1645–1657.

Marin, M., Öchsner, A., and Craciun, E. M. (2020b). A generalization of the Gurtin's variational principle in thermoelasticity without energy dissipation of dipolar bodies. *Contin. Mech. Thermodyn.*, 32(6):1685–1694.

Marin, M., Öchsner, A., and Craciun, E. M. (2020c). A generalization of the Saint-Venant's principle for an elastic body with dipolar structure. *Contin. Mech. Thermodyn.*, 32(1):269–278.

Marin, M., Öchsner, A., and Taus, D. (2020d). On structural stability for an elastic body with voids having dipolar structure. *Contin. Mech. Thermodyn.*, 32(1):147–160.

Marin, M., Othman, M. I. A., Seadawy, A. R., and Carstea, C. (2020e). A domain of influence in the Moore–Gibson–Thompson theory of dipolar bodies. *J. Taibah Univ. Sci.*, 14(1):653–660.

Marin, M., Vlase, S., and Paun, M. (2015). Considerations on double porosity structure for micropolar bodies. *Aip Advances*, 5(3):037113.

Markworth, A., Ramesh, K., and Parks, W. (1995). Modelling studies applied to functionally graded materials. *J. Mater. Sci.*, 30(9):2183–2193.

Maurer, M. J. (1969). Relaxation model for heat conduction in metals. *J. Appl. Phys.*, 40(13):5123–5130.

Maurer, M. J. and Thompson, H. A. (1973). Non-Fourier effects at high heat flux. *J. Heat Transf.*, 95(2):284–286.

Maxwell, J. C. (1867). IV. On the dynamical theory of gases. *Philos. Trans. Roy. Soc. London*, 157:49–88.

McTigue, D. F. (1986). Thermoelastic response of fluid-saturated porous rock. *J. Geophys. Res. Solid Earth*, 91(B9):9533–9542.

Mengi, Y. and Turhan, D. (1978). The influence of the retardation time of the heat flux on pulse propagation. *J. Appl. Mech.*, 45(2):433–435.

Miller, L. and Penta, R. (2020). Effective balance equations for poroelastic composites. *Contin. Mech. Thermodyn.*, 32:1533–1557.

Miranville, A. and Quintanilla, R. (2017). On the spatial behavior in two-temperature generalized thermoelastic theories. *Z. Angew. Math. Phys.*, 68(5):110.

Mishra, S. C., Kumar, T. P., and Mondal, B. (2008). Lattice Boltzmann method applied to the solution of energy equation of a radiation and non-Fourier heat conduction problem. *Numer. Heat Transf.; A: Appl.*, 54(8):798–818.

Misra, J. C., Chattopadhyay, N. C., and Chakravorty, A. (2000). Study of thermoelastic wave propagation in a half-space using GN theory. *J. Therm. Stresses*, 23(4):327–351.

Misra, J. C., Chattopadhyay, N. C., and Samanta, S. C. (1996). Study of the thermoelastic interactions in an elastic half space subjected to a ramp-type heating-A state-space approach. *Int. J. Eng. Sci.*, 34(5):579–596.

Mittal, G. and Kulkarni, V. S. (2019). Two temperature fractional order thermoelasticity theory in a spherical domain. *J. Therm. Stresses*, 42(9):1136–1152.

Mohamed, M., Lotfy, K., El-Bary, A., and Mahdy, A. (2021). Absorption illumination of a 2D rotator semi-infinite thermoelastic medium using a modified Green and Lindsay model. *Case Studies in Thermal Engineering*, page 101165.

Mondal, S. (2020). Memory response in a magneto-thermoelastic rod with moving heat source based on Eringen's nonlocal theory under dual-phase lag heat conduction. *Int. J. Comput. Methods*, 17(09):1950072.

Mondal, S. and Kanoria, M. (2020). Thermoelastic solutions for thermal distributions moving over thin slim rod under memory-dependent three-phase lag magneto-thermoelasticity. *Mech. Based Des. Struct. Mach.*, 48(3):277–298.

Mondal, S., Sarkar, N., and Sarkar, N. (2019). Waves in dual-phase-lag thermoelastic materials with voids based on Eringen's nonlocal elasticity. *J. Therm. Stresses*, 40(8):1035–1050.

Mukhopadhyay, B., Bera, R., and Debnath, L. (1991). On generalized thermoelastic disturbances in an elastic solid with a spherical cavity. *Int. J. Stoch. Anal.*, 4(3):225–240.

Mukhopadhyay, S., Kothari, S., and Kumar, R. (2010). On the representation of solutions for the theory of generalized thermoelasticity with three phase-lags. *Acta Mech.*, 214(3-4):305–314.

Mukhopadhyay, S., Kothari, S., and Kumar, R. (2011). A domain of influence theorem for thermoelasticity with dual phase-lags. *J. Therm. Stresses*, 34(9):923–933.

Mukhopadhyay, S. and Kumar, R. (2009). Thermoelastic interactions on two-temperature generalized thermoelasticity in an infinite medium with a cylindrical cavity. *J. Therm. Stresses*, 32(4):341–360.

Mukhopadhyay, S. and Kumar, R. (2010). State-space approach to thermoelastic interactions in generalized thermoelasticity type III. *Arch. Appl. Mech.*, 80(8):869–881.

Mukhopadhyay, S., Picard, R., Trostorff, S., and Waurick, M. (2016). On some models in linear thermo-elasticity with rational material laws. *Math. Mech. Solids*, 21(9):1149–1163.

Mukhopadhyay, S., Picard, R., Trostorff, S., and Waurick, M. (2017). A note on a two-temperature model in linear thermoelasticity. *Math. Mech. Solids*, 22(5):905–918.

Muller, I. (1967). On the entropy inequality. *Arch. Ration. Mech. Anal.*, 26:118–141.

Nayfeh, A. and Nemat-Nasser, S. (1971). Thermoelastic waves in solids with thermal relaxation. *Acta Mech.*, 12(1-2):53–69.

Nernst, W. (1917). *Die Theoretischen Grundlagen des n Warmestatzes.* Knapp, Halle.

Nettleton, R. E. (1960). Relaxation theory of thermal conduction in liquids. *Phys. Fluids*, 3(2):216–225.

Neumann, K. E. (1841). Die Gesetze der Doppelbrechung des Lichts in comprimirten oder ungleichförmig erwärmten unkrystallinischen Körpern. *Ann. Phys.*, 130(12):449–476.

Nickell, R. E. and Sackman, J. L. (1968). Variational principles for linear coupled thermoelasticity. *Q. Appl. Math.*, 26(1):11–26.

Nickell, W. P. (1966). Ring-necked pheasants hatch in nest of blue-winged teal. *The Wilson Bulletin*, 78(4):472–474.

Noda, N., Furukawa, T., and Ashida, F. (1989). Generalized thermoelasticity in an infinite solid with a hole. *J. Therm. Stresses*, 12(3):385–402.

Nowacki, W. (1968). Couple-stresses in the theory of thermoelasticity. In *Irreversible Aspects of Continuum Mechanics and Transfer of Physical Characteristics in Moving Fluids*, pages 259–278. Springer.

Nowacki, W. (1969). On the completeness of potentials in micropolar elasticity. *Arch. Mech. Stos.*, 21:107–122.

Nowacki, W. (1975). *Dynamic problems of thermoelasticity.* Springer Science & Business Media.

Nowinski, J. L. (1978). *Theory of thermoelasticity with applications*, volume 3. Sijthoff & Noordhoff International Publishers.

Nunziato, J. W. (1975). Acceleration waves in elastic materials with two temperatures. *Int. J. Non Linear Mech.*, 10(2):137–142.

Nunziato, J. W. and Cowin, S. C. (1979). A nonlinear theory of elastic materials with voids. *Arch. Ration. Mech. Anal.*, 72(2):175–201.

Obata, Y. and Noda, N. (1995). Transient thermal stresses in a hollow sphere of functionally gradient material. In *Proc. Therm. Stresses*, pages 335–338.

Onsager, L. (1931). Reciprocal relations in irreversible processes. I. *Phys. Rev.*, 37(4):405–426.

Othman, M. I. (2010a). The effect of rotation and thermal shock on a prefect conducting elastic half-space in generalized magneto-thermoelasticity with two relaxation times. *Mech. Mech. Eng.*, 14(1):31–55.

Othman, M. I. (2010b). Generalized electro-magneto-thermoelasticity in case of thermal shock plane waves for a finite conducting half-space with two relaxation times. *Mech.*

Mech. Eng., 14(1):5–30.

Othman, M. I. and Abbas, I. A. (2021). 2D problem of micropolar thermoelastic rotating medium with eigenvalue approach under the three-phase-lag model. *Waves Random Complex Media*, 0(0):1–16.

Othman, M. I. and Marin, M. (2017). Effect of thermal loading due to laser pulse on thermoelastic porous medium under GN theory. *Results Phys.*, 7:3863–3872.

Othman, M. I. and Said, S. M. (2014). 2D problem of magneto-thermoelasticity fiber-reinforced medium under temperature dependent properties with three-phase-lag model. *Meccanica*, 49(5):1225–1241.

Othman, M. I. A. (2003). State-space approach to generalized thermoelasticity plane waves with two relaxation times under dependence of the modulus of elasticity on reference temperature. *Can. J. Phys.*, 81(12):1403–1418.

Othman, M. I. A. (2004). Effect of rotation on plane waves in generalized thermo-elasticity with two relaxation times. *Int. J. Solids Struct.*, 41(11-12):2939–2956.

Othman, M. I. A., Elmaklizi, Y. D., and Said, S. M. (2013). Generalized thermoelastic medium with temperature-dependent properties for different theories under the effect of gravity field. *Int. J. Thermophys.*, 34(3):521–537.

Othman, M. I. A. and Singh, B. (2007). The effect of rotation on generalized micropolar thermoelasticity for a half-space under five theories. *Int. J. Solids Struct.*, 44(9):2748–2762.

Paria, G. (1958). Coupling of elastic and thermal deformations I. *Appl. Sci. Res. Sec. A*, 7(6):463–475.

Parkus, H. (1963). Methods of solution of thermoelastic boundary value problems. *High Temp. Struct. Mater.*, pages 317–347.

Parkus, H. (2012). *Thermoelasticity.* Springer Science & Business Media, New York.

Pecker, C. and Deresiewicz, H. (1973). Thermal effects on wave propagation in liquid-filled porous media. *Acta Mech.*, 16(1):45–64.

Peshkov, V. (1994). The second sound in Helium II. *J. Phys.*, 8:381.

Picard, R. (2005). Linear thermo-elasticity in non-smooth media. *Math. Methods Appl. Sci.*, 28(18):2183–2199.

Picard, R. (2009). A structural observation for linear material laws in classical mathematical physics. *Math. Methods Appl. Sci.*, 32(14):1768–1803.

Povstenko, Y. (2015). *Fractional thermoelasticity.* Springer.

Povstenko, Y. (2019). Fractional thermoelasticity problem for an infinite solid with a cylindrical hole under harmonic heat flux boundary condition. *Acta Mech.*, 230(6):2137–2144.

Prakash, G. S., Reddy, S. S., Das, S. K., Sundararajan, T., and Seetharamu, K. (2000). Numerical modelling of microscale effects in conduction for different thermal boundary conditions. *Numer. Heat Transf.; A: Appl.*, 38(5):513–532.

Prasad, R. (2012). *Some studies on generalized thermoelasticity and crack poblems*. PhD thesis, Institute of Technology (BHU), Varanasi, India.

Prasad, R., Das, S., and Mukhopadhyay, S. (2013). A two-dimensional problem of a mode I crack in a type III thermoelastic medium. *Math. Mech. Solids*, 18(5):506–523.

Prasad, R. and Kumar, R. (2021). Thermoelastic interactions on thick granular plate with three-phase-lag model under axisymmetric temperature distribution. *Waves Random Complex Media*, 0(0):1–21.

Prasad, R., Kumar, R., and Mukhopadhyay, S. (2010). Propagation of harmonic plane waves under thermoelasticity with dual-phase-lags. *Int. J. Eng. Sci.*, 48(12):2028–2043.

Prasad, R. and Mukhopadhyay, S. (2012). Propagation of harmonic plane waves in a rotating elastic medium under two-temperature thermoelasticity with relaxation parameter. *Comput. Methods Sci. Technol.*, 18(1):25–37.

Prevost, J. H. and Tao, D. (1983). Finite element analysis of dynamic coupled thermoelasticity problems with relaxation times. 50(4):817–822.

Puri, P. (1973). Plane waves in generalized thermoelasticity. *Int. J. Eng. Sci.*, 11(7):735–744.

Puri, P. and Jordan, P. M. (2006). On the propagation of harmonic plane waves under the two-temperature theory. *Int. J. Eng. Sci.*, 44(17):1113–1126.

Quintanilla, R. (1999). On the spatial behavior in thermoelasticity without energy dissipation. *J. Therm. Stresses*, 22(2):213–224.

Quintanilla, R. (2001). Structural stability and continuous dependence of solutions of thermoelasticity of type III. *Discrete Contin. Dyn. Syst. B*, 1(4):463–470.

Quintanilla, R. (2002). Existence in thermoelasticity without energy dissipation. *J. Therm. Stresses*, 25(2):195–202.

Quintanilla, R. (2003). A condition on the delay parameters in the one-dimensional dual-phase-lag thermoelastic theory. *J. Therm. Stresses*, 26(7):713–721.

Quintanilla, R. (2004a). On existence, structural stability, convergence and spatial behavior in thermoelasticity with two temperatures. *Acta Mech.*, 168(1):61–73.

Quintanilla, R. (2004b). Structural stability and convergence in thermoelasticity and heat conduction with relaxation times. *Appl. Anal.*, 83(2):135–155.

Quintanilla, R. (2009). Spatial behaviour of solutions of the three phase-lag heat equation. *Appl. Math. Comput.*, 213(1):153–162.

Quintanilla, R. (2018). Some qualitative results for a modification of the Green–Lindsay thermoelasticity. *Meccanica*, 53(14):3607–3613.

Quintanilla, R. and Jordan, P. (2009). A note on the two temperature theory with dual-phase-lag delay: Some exact solutions. *Mech. Res. Commun.*, 36(7):796–803.

Quintanilla, R. and Racke, R. (2008). A note on stability in three-phase-lag heat conduction. *Int. J. Heat Mass Transf.*, 51(1-2):24–29.

Quintanilla, R., Racke, R., and Ueda, Y. (2019). Decay for thermoelastic Green-Lindsay plates in bounded and unbounded domains.

Quintanilla, R. and Straughan, B. (2004). A note on discontinuity waves in type III thermoelasticity. *Proc. R. Soc. Lond. A.*, 460(2044):1169–1175.

Rice, J. R. and Cleary, M. P. (1976). Some basic stress diffusion solutions for fluid-saturated elastic porous media with compressible constituents. *Rev. Geophys.*, 14(2):227–241.

Rincon, M., Santos, B., and Límaco, J. (2005). Numerical method, existence and uniqueness for thermoelasticity system with moving boundary. *Comput. Appl. Math.*, 24(3):439–460.

Rohan, E., Naili, S., and Lemaire, T. (2016). Double porosity in fluid-saturated elastic media: Deriving effective parameters by hierarchical homogenization of static problem. *Contin. Mech. Thermodyn.*, 28(5):1263–1293.

Roubíček, T. (2017). Geophysical models of heat and fluid flow in damageable poroelastic continua. *Contin. Mech. Thermodyn.*, 29(2):625–646.

Roychoudhuri, S. K. (2007a). On a thermoelastic three-phase-lag model. *J. Therm. Stresses*, 30(3):231–238.

Roychoudhuri, S. K. (2007b). One-dimensional thermoelastic waves in elastic half-space with dual phase-lag effects. *J. Mech. Mater. Struct.*, 2(3):489–503.

Roychoudhuri, S. K. and Bandyopadhyay, N. (2005). Thermoelastic wave propagation in a rotating elastic medium without energy dissipation. *Int. J. Math. Math. Sci.*, 2005(1):99–107.

Roychoudhuri, S. K. and Roy, G. C. (1990). Temperature-rate dependent magnetothermoelastic waves in a finitely conducting elastic half-space. *Comput. Math. Appl.*, 19(5):85–93.

Sadd, M. H. and Cha, C. Y. (1982). Axisymmetric non-Fourier temperatures in cylindrically bounded domains. *Int. J. Non Linear Mech.*, 17(3):129–136.

Saeed, T., Abbas, I., and Marin, M. (2020). A GL model on thermo-elastic interaction in a poroelastic material using finite element method. *Symmetry*, 12(3):488.

Sanderson, T., Ume, C., and Jarzynski, J. (1995). Hyperbolic heat equations in laser generated ultrasound models. *Ultrasonics*, 33(6):415–421.

Sarkar, I. (2021). Temperature-rate dependence thermoelasticity theory with memory-dependent derivative: Stability and uniqueness. *J. Eng, Mech.*, 147(3):04021003.

Sarkar, N. (2017). Temperature dependence of the elastic modulus in three-dimensional generalized thermoelasticity with dual-phase-lag effects. *Comput. Math. Model.*, 28(2):208–227.

Sarkar, N. and De, S. (2020). Waves in magneto-thermoelastic solids under modified Green–Lindsay model. *J. Therm. Stresses*, 43(5):594–611.

Sarkar, N., De, S., and Sarkar, N. (2019). Modified Green–Lindsay model on the reflection and propagation of thermoelastic plane waves at an isothermal stress-free surface. *Indian J. Phys.*, 94:1215–1225.

Sarkar, N. and Lahiri, A. (2012). Temperature rate dependent generalized thermoelasticity with modified Ohm's law. *Int. J. Comput. Mater. Sci. Eng.*, 1(04):1250031.

Sarkar, N., Mondal, S., and Othman, M. I. (2020). Effect of the laser pulse on transient waves in a non-local thermoelastic medium under Green-Naghdi theory. *Struct. Eng. Mech.*, 74(4):471–479.

Shakeriaski, F., Ghodrat, M., Escobedo-Diaz, J., and Behnia, M. (2021a). Modified Green–Lindsay thermoelasticity wave propagation in elastic materials under thermal shocks. *J. Comput. Des. Eng.*, 8(1):36–54.

Shakeriaski, F., Ghodrat, M., Escobedo-Diaz, J., and Behnia, M. (2021b). Recent advances in generalized thermoelasticity theory and the modified models: A review. *J. Comput. Des. Eng.*, 8(1):15–35.

Sharma, J. N., Kumar, V., and Chand, D. (2003). Reflection of generalized thermoelastic waves from the boundary of a half-space. *J. Therm. Stresses*, 26(10):925–942.

Sharma, M. (2008a). Wave propagation in thermoelastic saturated porous medium. *J. Earth Syst. Sci.*, 117(6):951–958.

Sharma, M. D. (2008b). Propagation of inhomogeneous plane waves in anisotropic viscoelastic media. *Acta Mech.*, 200(3-4):145.

Sherief, H. H. (1992). Fundamental solution for thermoelasticity with two relaxation times. *Int. J. Eng. Sci.*, 30(7):861–870.

Sherief, H. H. (1993). State space approach to thermoelasticity with two relaxation times. *Int. J. Eng. Sci.*, 31(8):1177–1189.

Sherief, H. H. (1994). A thermo-mechanical shock problem for thermoelasticity with two relaxation times. *Int. J. Eng. Sci.*, 32(2):313–325.

Sherief, H. H. and Dhaliwal, R. S. (1980). A uniqueness theorem and a variational principle for generalized thermoelasticity. *J. Therm. Stresses*, 3(2):223–230.

Sherief, H. H. and El-Maghraby, N. M. (2005). A mode-I crack problem for an infinite space in generalized thermoelasticity. *J. Therm. Stresses*, 28(5):465–484.

Sherief, H. H., El-Maghraby, N. M., and Abbas, M. F. (2020). Two-dimensional axisymmetric thermoelastic problem for an infinite-space with a cylindrical heat source of a different material under Green–Lindsay theory. *Mech. Based Des. Struct. Mach.*, 0(0):1–13.

Sherief, H. H., Hamza, F. A., and El-Sayed, A. M. (2005). Theory of generalized micropolar thermoelasticity and an axisymmetric half-space problem. *J. Therm. Stresses*, 28(4):409–437.

Sherief, H. H. and Hussein, E. M. (2012). A mathematical model for short-time filtration in poroelastic media with thermal relaxation and two temperatures. *Transp. Porous Media*, 91(1):199–223.

Sherief, H. H. and Saleh, H. A. (2005). A half-space problem in the theory of generalized thermoelastic diffusion. *Int. J. Solids Struct.*, 42(15):4484–4493.

Singh, B. (2000). Reflection of plane sound wave from a micropolar generalized thermoelastic solid half-space. *J. Sound Vib.*, 235(4):685–696.

Singh, B. and Bijarnia, R. (2012). Propagation of plane waves in anisotropic two temperature generalized thermoelasticity. *Math. Mech. Solids*, 17(3):279–288.

Singh, B., Gupta, M., and Mukhopadhyay, S. (2020). On the fundamental solutions for the strain and temperature rate-dependent generalized thermoelasticity theory. *J. Therm. Stresses*, 43(5):650–664.

Singh, B. and Kumar, R. (1998). Reflection of plane waves from the flat boundary of a micropolar generalized thermoelastic half-space. *Int. J. Eng. Sci.*, 36(7-8):865–890.

Singh, B., Pal, S., and Barman, K. (2019). Thermoelastic interaction in the semi-infinite solid medium due to three-phase-lag effect involving memory-dependent derivative. *J. Therm. Stresses*, 42(7):874–889.

Singh, R. V. and Mukhopadhyay, S. (2020). An investigation on strain and temperature rate-dependent thermoelasticity and its infinite speed behavior. *J. Therm. Stresses*, 43(3):269–283.

Sladek, J., Sladek, V., and Atluri, S. (2001). A pure contour formulation for the meshless local boundary integral equation method in thermoelasticity. *Comput. Model. Eng.*

Sci., 2(4):423–434.

Sladek, V. and Sladek, J. (1984). Boundary integral equation method in thermoelasticity part III: Uncoupled thermoelasticity. *Appl. Math. Model.*, 8(6):413–418.

Stasa, F. (1985). *Applied finite element formulation for thermal stress analysis*. CBS Publishing, New York.

Stehfest, H. (1970). Algorithm 368: Numerical inversion of laplace transforms [D5]. *Commun. ACM*, 13(1):47–49.

Sternberg, E. and McDowell, E. L. (1957). On the steady-state thermoelastic problem for the half-space. *Q. Appl. Math.*, 14(4):381–398.

Straughan, B. (2011). *Heat waves*, volume 177. Springer Science & Business Media.

Suhubi, E. S. (1975). Thermoelastic solids. In *Continuum Mech. Single-Sub. Bod.*, pages 173–265. Elsevier.

Sur, A. (2020). Wave propagation analysis of porous asphalts on account of memory responses. *Mech. Based Des. Struct. Mach.*, 0(0):1–19.

Sur, A. and Kanoria, M. (2012). Fractional order two-temperature thermoelasticity with finite wave speed. *Acta Mech.*, 223(12):2685–2701.

Sur, A. and Kanoria, M. (2017). Three-dimensional thermoelastic problem under two-temperature theory. *Int. J. Comput. Methods*, 14(03):1750030.

Sur, A. and Mondal, S. (2020a). Effect of non-locality in the vibration of a micro-scale beam under two-temperature memory responses. *Waves Random Complex Media*, 0(0):1–28.

Sur, A. and Mondal, S. (2020b). A generalized thermoelastic problem due to nonlocal effect in presence of mode I crack. *J. Therm. Stresses*, 43(10):1277–1299.

Svanadze, M., Tibullo, V., and Zampoli, V. (2006). Fundamental solution in the theory of micropolar thermoelasticity without energy dissipation. *J. Therm. Stresses*, 29(1):57–66.

Swaminathan, K., Naveenkumar, D., Zenkour, A., and Carrera, E. (2015). Stress, vibration and buckling analyses of FGM plates- A state-of-the-art review. *Compos. Struct.*, 120:10–31.

Swaminathan, K. and Sangeetha, D. (2017). Thermal analysis of fgm plates–A critical review of various modeling techniques and solution methods. *Compos. Struct.*, 160:43–60.

Tao, D. and Prevost, J. (1984). Relaxation effects on generalized thermoelastic waves. *J. Therm. Stresses*, 7(1):79–89.

Thomson, W. (1853). XV. On the dynamical theory of heat, with numerical results deduced from Mr Joule's equivalent of a thermal unit, and M. Regnault's observations on steam. *Earth Environ. Sci. Trans. R. Soc. Edinb.*, 20(2):261–288.

Tisza, L. (1947). The theory of liquid Helium. *Phys. Rev.*, 72(9):838.

Tiwari, R. (2017). *Mathematical modeling on advanced thermoelasticity and magneto thermoelasticity*. PhD thesis, Indian institute of technology (BHU), Varanasi, India.

Tiwari, R. and Mukhopadhyay, S. (2017). On electromagneto-thermoelastic plane waves under Green–Naghdi theory of thermoelasticity-II. *J. Therm. Stresses*, 40(8):1040–1062.

Todhunter, I. (1886). *A History of the Theory of Elasticity and of the Strength of Materials from Galilei to the Present Time... Edited and Completed... by K. Pearson*. University Press.

Treitel, S. (1959). On the attenuation of small-amplitude plane stress waves in a thermoelastic solid. *J. Geophys. Res.*, 64(6):661–665.

Truesdell, C. (2013). *Linear Theories of Elasticity and Thermoelasticity: Linear and Nonlinear Theories of Rods, Plates, and Shells*, volume 2. Springer.

Tzou, D. Y. (1993). An engineering assessment to the relaxation time in thermal wave propagation. *Int. J. Heat Mass Transf.*, 36(7):1845–1851.

Tzou, D. Y. (1995a). The generalized lagging response in small-scale and high-rate heating. *Int. J. Heat Mass Transf.*, 38(17):3231–3240.

Tzou, D. Y. (1995b). A unified field approach for heat conduction from macro-to micro-scales. *J. Heat Transf.*, 117(1):8–16.

Tzou, D. Y. (1997). *Macro-to microscale heat transfer: The lagging behavior*. Taylor and Francis, Washington, DC.

Vernotte, P. (1958). Les paradoxes de la theorie continue de l'equation de la chaleur. *Compt. Rend.*, 246:3154–3155.

Vernotte, P. (1961). Some possible complications in the phenomena of thermal conduction. *Compt. Rend.*, 252:2190–2191.

Verruijt, A. (1969). The completeness of Biot's solution of the coupled thermoelastic problem. *Q. Appl. Math.*, 26(4):485–490.

Voigt, W. (2014). *Lehrbuch der kristallphysik (mit ausschluss der kristalloptik)*. Springer-Verlag.

Wadhawan, M. C. (1973). Thermoelastic response of a cylinder in the generalised dynamical theory of thermoelasticity. *Pure Appl. Geophys.*, 102(1):37–50.

Wang, H. F. (2017). *Theory of linear poroelasticity with applications to geomechanics and hydrogeology*. Princeton University Press.

Wang, J. and Slattery, S. P. (2002). Thermoelasticity without energy dissipation for initially stressed bodies. *Int. J. Math. Math. Sci.*, 31(6):329–337.

Wang, Y. and Papamichos, E. (1994). Conductive heat flow and thermally induced fluid flow around a well bore in a poroelastic medium. *Water Resour. Res.*, 30(12):3375–3384.

Warren, W. E. (1972). Thermoelastic wave propagation from cylindrical and spherical cavities in the two-temperature theory. *J. Appl. Phys.*, 43(8):3595–3597.

Warren, W. E. and Chen, P. J. (1973). Wave propagation in the two temperature theory of thermoelasticity. *Acta Mech.*, 16(1-2):21–33.

Watson, G. N. (1996). *A treatise on the theory of Bessel functions*. Cambridge University Press, Cambridge.

Wei*, J. and Fu, L.-Y. (2020). The fundamental solution of poro-thermoelastic theory. In *2nd SEG Rock Physics Workshop: Challenges in Deep and Unconventional Oil/Gas Exploration*, pages 52–52. Society of Exploration Geophysicists.

Wei, W., Zheng, R., Liu, G., and Tao, H. (2016). Reflection and refraction of P wave at the interface between thermoelastic and porous thermoelastic medium. *Transp. Porous Media*, 113(1):1–27.

Weiner, J. (1957). A uniqueness theorem for the coupled thermoelastic problem. *Q. Appl. Math.*, 15(1):102–105.

Xu, B. and Li, B. (2003). Finite element solution of non-Fourier thermal wave problems. *Numer. Heat Transf. B: Fundam.*, 44(1):45–60.

Youssef, H. (2007). Theory of generalized porothermoelasticity. *Int. J. Rock Mech. Min. Sci.*, 44(2):222–227.

Youssef, H. and Al-Lehaibi, E. A. (2007). State-space approach of two-temperature generalized thermoelasticity of one-dimensional problem. *Int. J. Solids Struct.*, 44(5):1550–1562.

Youssef, H. M. (2006a). Problem of generalized thermoelastic infinite medium with cylindrical cavity subjected to a ramp-type heating and loading. *Arch. Appl. Mech.*, 75(8-9):553–565.

Youssef, H. M. (2006b). Theory of two-temperature-generalized thermoelasticity. *IMA J. Appl. Math.*, 71(3):383–390.

Youssef, H. M. (2006c). Two-dimensional generalized thermoelasticity problem for a half-space subjected to ramp-type heating. *Eur. J. Mech. A. Solids.*, 25(5):745–763.

Youssef, H. M. (2008). Two-dimensional problem of a two-temperature generalized thermoelastic half-space subjected to ramp-type heating. *Comput. Math. Model.*, 19(2):201.

Youssef, H. M. (2010). Two-temperature generalized thermoelastic infinite medium with cylindrical cavity subjected to moving heat source. *Arch. Appl. Mech.*, 80(11):1213–1224.

Youssef, H. M. (2011). Theory of two-temperature thermoelasticity without energy dissipation. *J. Therm. Stresses*, 34(2):138–146.

Youssef, H. M. and Al-Harby, A. H. (2007). State-space approach of two-temperature generalized thermoelasticity of infinite body with a spherical cavity subjected to different types of thermal loading. *Arch. Appl. Mech.*, 77(9):675–687.

Youssef, H. M. and Al-Lehaibi, E. A. (2010). Fractional order generalized thermoelastic half-space subjected to ramp-type heating. *Mech. Res. Commun.*, 37(5):448–452.

Youssef, H. M. and El-Bary, A. (2010). Two-temperature generalized thermoelasticity with variable thermal conductivity. *J. Therm. Stresses*, 33(3):187–201.

Youssef, H. M. and El-Bary, A. A. (2014). Thermoelastic material response due to laser pulse heating in context of four theorems of thermoelasticity. *J. Therm. Stresses*, 37(12):1379–1389.

Youssef, H. M. and El-Bary, A. A. (2018). Theory of hyperbolic two-temperature generalized thermoelasticity. *Mater. Phys. Mech*, 40(2).

Youssef, H. M., El-Bary, A. A., and Al-Lehaibi, E. A. (2021). Thermal-stress analysis of a damaged solid sphere using hyperbolic two-temperature generalized thermoelasticity theory. *Sci. Rep.*, 11(1):1–19.

Youssef, H. M. and Elsibai, K. A. (2015). On the theory of two-temperature thermoelasticity without energy dissipation of Green–Naghdi model. *Appl. Anal.*, 94(10):1997–2010.

Yu, Y. J., Xue, Z.-N., and Tian, X.-G. (2018). A modified Green–Lindsay thermoelasticity with strain rate to eliminate the discontinuity. *Meccanica*, 53(10):2543–2554.

Zampoli, V. and Amendola, A. (2019). Uniqueness, continuous dependence, and spatial behavior of the solution in linear porous thermoelasticity with two relaxation times. *J. Therm. Stresses*, 42(12):1582–1602.

Zenkour, A. (2018). Refined two-temperature multi-phase-lags theory for thermomechanical response of microbeams using the modified couple stress analysis. *Acta Mech.*, 229(9):3671–3692.

Zenkour, A. (2021). Thermal diffusion of an unbounded solid with a spherical cavity via refined three-phase-lag Green–Naghdi models. *Indian J. Phys.*, pages 1–18.

Zenkour, A. M. (2015). Three-dimensional thermal shock plate problem within the framework of different thermoelasticity theories. *Compos. Struct.*, 132:1029–1042.

Zenkour, A. M., Mashat, D. S., and Abouelregal, A. E. (2013). The effect of dual-phase-lag model on reflection of thermoelastic waves in a solid half space with variable material properties. *Acta Mech. Solida Sin.*, 26(6):659–670.

Zimmerman, R. W. and Lutz, M. P. (1999). Thermal stresses and thermal expansion in a uniformly heated functionally graded cylinder. *J. Therm. Stresses*, 22(2):177–188.

***

Appendix

Method for solving the Fredholm integral equation of first kind numerically

Consider a Fredholm integral equation of first the kind as (Delves and Mohamed (1985))

$$\int_a^b N(z,x,s)\psi(z,s)dz = L(x,s) \tag{A.1}$$

By following Delves and Mohamed (1985) and Sherief and El-Maghreby (2005), Eq. (A.1) can be rewritten as

$$N\psi = L \tag{A.2}$$

where $L(x,s)$ will be known to some accuracy ϵ. Therefore, the solution of Eq. (A.2) is expected to satisfy the accuracy constraint $||N\psi - L|| \leq \epsilon$. Now, the objective is to find a smoothest function (ψ) satisfying Eq. (A.2) and the accuracy constraint such that for some linear operator F, the norm of $F\psi$ has minimum value. This objective leads to the following constrained minimization problem

$$\underset{\psi}{min}||F\psi||, \quad \text{subjected to,} \;\; ||N\psi - L|| \leq \epsilon. \tag{A.3}$$

Deriving solution to the minimization problem Eq. (A.3) is possible for any given norm, still, it is relatively complicated to solve the problem analytically. Therefore, instead of solving this problem, Delves and Mohamed (1985) have solved a related problem numerically.

From the present problem we can observe that for some operator, F the minimum of

$||F\psi||$ will decrease with increase in ϵ, i.e. as the constrained is weakened. Therefore, for the minimization of Eqs. (A.1-A.2), the constrain will be binding to $||N\psi - L|| = \epsilon$. Now, by solving the unconstrained problem

$$\underset{\psi}{min}||N\psi - L||^2 + \kappa||F\psi||^2, \tag{A.4}$$

we will find a minimum value, ς of $||N\psi - L||$. Now, $\kappa \to 0$, $\varsigma \to 0$ implies that the solution of the Eqs. (A.1) and (A.2) exist and for some value of κ, $\varsigma = \epsilon$. Therefore, the solution of the Eq. (A.4) is identical to the solution of Eqs. (A.1-A.2) (see Delves and Mohamed (1985)). Since Eq. (A.4) is an unconstrained problem therefore, it is easy to solve this problem as compared to Eqs. (A.1-A.2). This unconstrained problem is referred to as regularization problem, and the numerical method used for solving this problem is known as regularization method (see refs. Delves and Mohamed (1985); Sherief and El-Magharby (2005)).

The most common choice for the operator F is $1, \frac{d}{dx}, \frac{d^2}{dx^2}$. Here, we take $F = 1$ along with the usual $\mathbb{L}^2$ norm for computation purpose.

Now, the Eq. (A.4) will takes the form

$$\underset{\psi}{min}\mathcal{M}(\psi) = \langle N\psi - L, N\psi - L\rangle + \kappa \langle \psi, \psi \rangle \tag{A.5}$$

Here (,) denote the scalar product in $\mathbb{L}^2$ norm.

Rearranging Eq. (A.5), we find

$$\mathcal{M}(\psi) = \left\langle \psi, \{N^+N + \kappa I\}\psi \right\rangle - \left\langle \psi, N^+L \right\rangle - \left\langle N^+L, \psi \right\rangle + \langle L, L\rangle \tag{A.6}$$

where N^+ denote the Hermitian conjugate of N.

Therefore, for the minimum value of $\mathcal{M}$ at any point ψ for any arbitrary function g, we have

$$\left.\frac{\partial \mathcal{M}(\psi + \epsilon g)}{\partial \epsilon}\right|_{\epsilon=0} = 0 \tag{A.7}$$

Now, in view of Eqs. (A.6) and (A.7), we find the relation for minimum ψ as

$$(N^+N + \kappa I)\psi = N^+L \tag{A.8}$$

which implies that

$$\int_a^b \hat{N}(z,x,s)\psi(z,s)dz + \kappa\psi(z,s) = \hat{L}(x,s) \tag{A.9}$$

where

$$\hat{N}(z,x,s) = \int_a^b N^*(z,u,s)N(u,x,s)du \tag{A.10}$$

$$\hat{L}(x,s) = \int_a^b N^*(z,x,s)L(z,s)dz \tag{A.11}$$

Here $N^*(z,x,s)$ is the complex conjugate of $N(z,x,s)$.

Thus, the Fredholm integral equation of first kind (A.1) is now transformed into a Fredholm integral equation of the second kind with iterated kernels given by Eq. (A.9), and the parameter κ is taken to be 10^{-5} (see Delves and Mohamed (1985)).

Next, we present a numerical method for solving a Fredholm integral equation of the second kind. For this purpose, we consider an integral equation of the form

$$\Psi(\varphi,s) + \int_a^b N(\varphi,u,s)\Psi(u,s)du = L(\varphi,s) \tag{A.12}$$

Eq. (A.12) can be approximated as

$$\Psi(\varphi,s) + \sum_{j=0}^{m} S_j N(\varphi,u_j,s)\Psi(u_j,s) \approx L(\varphi,s) \tag{A.13}$$

where u_j,$j = 0,1,2,...,m$ are the $m+1$ equally spaced points in the interval $[a,b]$, and S_j denotes the corresponding weight constant. Now, we assume that the Eq. (A.13) satisfies the chosen points $u_j, j = 0,1,2,...,m$. Therefore, we find the system of $m+1$ linear equations as

$$\Psi(u_i,s) + \sum_{j=0}^{m} S_j N(u_i,u_j,s)\Psi(u_i,s) \approx L(u_i,s), \quad i = 0,1,2,...,m, \tag{A.14}$$

in the $m+1$ unknowns $\Psi(u_0,s)$,$\Psi(u_1,s)$,...,$\Psi(u_m,s)$, that specify the approximation of the function $\Psi(u,s)$ at $m+1$ chosen points.

Now, if we take the notation $\Psi(u_i,s) = \Psi_i$, $L(u_i,s) = L_i$, and $N(u_i,u_j,s) = N_{ij}$, $i,j = 0,1,...m$, then from equation (A.14) we have

$$\Psi_i + \sum_{j=0}^{m} S_j N_{ij}\Psi_j \approx L_i, \;\; i = 0,1,..,m, \tag{A.15}$$

Therefore, the system of Eq. (A.15) can be written in the matrix form as

$$\boldsymbol{\Psi} + \boldsymbol{N}\boldsymbol{S}\boldsymbol{\Psi} = \boldsymbol{L}$$

or,

$$(I + \boldsymbol{N}\boldsymbol{S})\boldsymbol{\Psi} = \boldsymbol{L} \tag{A.16}$$

where Ψ_i and L_i are the components of vector $\boldsymbol{\Psi}$ and $\boldsymbol{L}$, respectively and matrices $\boldsymbol{N}$ and $\boldsymbol{S}$ are defined as $\boldsymbol{N} = [N_{ij}]$,$\boldsymbol{S} = [S_i\delta_{ij}]$, I is the unity matrix of order $m + 1$.

For the numerical computation, the weighting constants S_j are taken by following Simpson's one-third rule of integration as

$$\begin{gathered} S_0 = S_m = \tfrac{h}{3}, \\ S_{2i-1} = \tfrac{4h}{3},\ \ S_{2i} = \tfrac{2h}{3},\ \ i = 1, 2, 3, ..., \tfrac{m}{2} \end{gathered} \tag{A.17}$$

PUBLICATIONS AND CONFERENCES

Publication Related to the Thesis:

- **Om Namha Shivay**, and Santwana Mukhopadhyay. "A porothermoelasticity theory for anisotropic medium." ***Continuum Mechanics and Thermodynamics*** (2021): 1-18. DOI. 10.1007/s00161-021-01030-2

- **Om Namha Shivay**, and Santwana Mukhopadhyay. "Variational principle and reciprocity theorem on the temperature-rate-dependent poro-thermoelasticity theory." ***Acta Mechanica*** (2021): 1-13. DOI. 10.1007/s00707-021-02996-5

- **Om Namha Shivay**, and Santwana Mukhopadhyay. "A complete Galerkin's type approach of finite element for the solution of a problem on modified Green–Lindsay thermoelasticity for a functionally graded hollow disk." ***European Journal of Mechanics-A/Solids*** 80 (2020): 103914.

- **Om Namha Shivay**, and Santwana, Mukhopadhyay. "On the temperature-rate dependent two-temperature thermoelasticity theory." ***Journal of Heat Transfer*** 142.2 (2020): 022102.

- **Om Namha Shivay**, and Santwana Mukhopadhyay. "On the solution of a problem of extended thermoelasticity theory (ETE) by using a complete finite element approach." ***Computational Methods in Science and Technology*** *2 (201*9): 5.

- **Om Namha Shivay**, and Santwana Mukhopadhyay. "An investigation on modified temperature-rate dependent two-temperature thermoelasticity theory." (Communicated to an International Journal)

Publications Apart from Thesis:

- **Om Namha Shivay**, and Santwana Mukhopadhyay. "Some basic theorems on a recent model of linear thermoelasticity for a homogeneous and isotropic medium." **Mathematics and Mechanics of Solids** 24.8 (2019): 2444-2457.
- Anil Kumar, **Om Namha Shivay**, and Santwana Mukhopadhyay. "Infinite speed behavior of two-temperature Green–Lindsay thermoelasticity theory under temperature-dependent thermal conductivity." **Zeitschrift für angewandte Mathematik und Physik** 70.1 (2019): 1-16.
- Shashi Kant, Manushi Gupta, **Om Namha Shivay**, and Santwana Mukhopadhyay. "An investigation on a two-dimensional problem of Mode-I crack in a thermoelastic medium." ***Zeitschrift für angewandte Mathematik und Physik*** 69.2 (2018): 21.

Conferences and Workshops:

- Participated in 64th International Congress of ISTAM held at IIT Bhubaneshwar during December 9-12, 2019 and presented a work with the title "An investigation of the Moore-Gibson-Thompson thermoelasticity theory using a messfree finite element method."
- Participated in International Conference on Differential Equations and Control Problems: Modeling, Analysis and Computations (ICDECP19) held at IIT Mandi during June 17-19, 2019 and presented a work with the title "Finite element solution of a problem on coupled thermoelasticity for functionally graded material using two different approaches for time domain."
- Participated in QIP short term Course on Computational Methods on Integral and differential Equations held at IIT (BHU), Varanasi, during December 10-16, 2018.
- Participated in International Conference on Engineering, Computers and Natural Sciences 2018 held at Vivanta by Taj, Panjim, Goa during October 19-21, 2018 and presented the paper with the title "Application of complete finite element method on a coupled thermoelasticity theory of type III."
- Participated in GIAN Course on Fractional Derivatives and Its Applications held at IIT (BHU), Varanasi, during January, 30- February 03, 2018.
- Attended training program on Tools for Scientific Documentation: LaTeX, JabRef, DocEar and other open source software held at DST, Banaras Hindu University during January 2-12, 2018.

- Attended a workshop on "Smart Materials and Structures – Recent Trends in Industrial Applications" held at IIT (BHU) during September 4-11, 2017.

***