

Research Group 5

Group Name	Mechanics and Biomechanics.
Academic Year	2021

Basic Information	
Department	Mathematics
Location	Sohag University

Group Members			
No. of Prof.	No. of Ass. Prof.	No. of Lect.	No. of Ass. Lect. & Demonst.
2	-	-	2

Staff members

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Ass. Lecturers & Demonstrators

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3	Fathi Anwar Ahmed	Instructor	fathianwur@yahoo.com Fathy.Anwar@science.sohag.edu.eg	Biomechanics	Fathi Anwar - Google Scholar
4	Abdelrahman Abdelkareem adbella	Instructor	Abdrahmanabbas20@gmail.com	Biomathematics	https://scholar.google.com/citations?hl=ar&user=FArVDo8AAAAJ

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M. Sc Thesis

#	Name	Title	Approval date
1			
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Articles produced by the Lab



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جامعة سوهاج
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#		
1.	<i>A study on photothermal waves in an unbounded semiconductor medium with cylindrical cavity</i>	Mechanics of Time-Dependent Materials, 2017
2.	<i>A semi-group of contractions in elasticity of microstretch materials</i>	Journal of Computational and Theoretical Nanoscience, 2017.
3.	<i>Photo-thermal-elastic interaction in an unbounded semiconducting medium with spherical cavity due to pulse heat flux.</i>	Waves in Random and Complex Media, 2018. 28(4): p. 670-682.
4.	<i>On continuous dependence for the mixed problem of microstretch bodies.</i>	Analele Stiintifice ale Universitatii Ovidius Constanta, Seria Matematica, 2017. 25(1): p. 131-143.
5.	<i>Generalized thermoelastic interactions in a hollow cylinder with temperature-dependent material properties</i>	Journal of Thermal Science and Technology, 2017. 12(1).
6.	<i>Free vibration of a thermoelastic hollow cylinder under two-temperature generalized thermoelastic theory.</i>	Mechanics Based Design of Structures and Machines, 2017. 45(3): p. 395-405.
7.	<i>Dual-phase-lag model on generalized magneto-thermoelastic interaction in a functionally graded material.</i>	International Journal of Acoustics and Vibrations, 2017. 22(3): p. 369-376.
8.	<i>Analytical solutions of thermoelastic interactions in a hollow cylinder with one relaxation time.</i>	Mathematics and Mechanics of Solids, 2017. 22(2): p. 210-223.
9.	<i>Analytical solutions of 2-D problem for cracked thermoelastic fiber-reinforced anisotropic material.</i>	Theoretical and Applied Fracture Mechanics, 2017. 91: p. 31-36.
10.	<i>Analytical solution of thermoelastic interaction in a half-space by pulsed laser heating.</i>	Physica E: Low-Dimensional Systems and Nanostructures, 2017. 87: p. 254-260.
11.	<i>Analytical solution of fractional order photo-thermoelasticity in a non-homogenous semiconductor medium.</i>	Multidiscipline Modeling in Materials and Structures, 2018. 14(5): p. 1017-1030.
12.	<i>Analytical and computational solution of three-dimensional thermoelastic interactions in porous material with temperature-dependent properties</i>	Journal of Computational and Theoretical Nanoscience, 2017. 14(8): p. 4021-4033.
13.	<i>A Two-Temperature Photothermal Interaction in a Semiconductor Medium Containing a Cylindrical Hole.</i>	International Journal of Thermophysics, 2018. 39(1).
14.	<i>Theoretical analysis of thermal damages in skin tissue induced by intense moving heat source</i>	International Journal of Heat and Mass Transfer, 2018. 124: p. 1011-1014.
15.	<i>A Study on Fractional Order Theory in Thermoelastic Half-Space under Thermal Loading</i>	Physical Mesomechanics, 2018. 21(2): p. 150-156.
16.	<i>Stability of latent pathogen infection model with CTL immune response and saturated cellular infection.</i>	16. Stability of latent pathogen infection model with CTL immune response and saturated cellular infection. <i>AIP Advances</i>,



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		2018. 8(12).
17.	<i>Photo-thermoelastic interactions in a 2D semiconducting medium.</i>	European Physical Journal Plus, 2018. 133 (12).
18.	<i>A Mode I Crack Problem for a Thermoelastic Fibre-Reinforced Anisotropic Material Using Finite Element Method.</i>	Physical Mesomechanics, 2018. 21 (2): p. 135-139.
19.	<i>The influence of thermal and conductive temperatures in a nanoscale resonator.</i>	Results in Physics, 2018. 9 : p. 705-711.
20.	<i>A Green-Naghdi Model in a 2D Problem of a Mode I Crack in an Isotropic Thermoelastic Plate.</i>	Physical Mesomechanics, 2018. 21 (2): p. 99-103.
21.	<i>Generalized photo-thermo-elastic interaction in a semiconductor plate with two relaxation times.</i>	Thin-Walled Structures, 2018. 129 : p. 342-348.
22.	<i>Free vibrations of nanoscale beam under two-temperature green and Naghdi model</i>	International Journal of Acoustics and Vibrations, 2018. 23 (3): p. 289-293.
23.	<i>Fractional Order Theory in a Semiconductor Medium Photogenerated by a Focused Laser Beam.</i>	Physical Mesomechanics, 2018. 21 (2): p. 117-123.
24.	<i>Fractional order photo-thermo-elastic waves in a two-dimensional semiconductor plate</i>	European Physical Journal Plus, 2018. 133 (6).
25.	<i>Finite Element Analysis of Thermoelastic Fiber-Reinforced Anisotropic Hollow Cylinder with Dual-Phase-Lag Model</i>	Strength of Materials, 2018. 50 (3): p. 396-405.
26.	<i>The effect of fractional derivative on photo-thermoelastic interaction in an infinite semiconducting medium with a cylindrical hole</i>	Engineering Solid Mechanics, 2018. 6 (3): p. 275-284.
27.	<i>A DPL model of photothermal interaction in a semiconductor material</i>	Waves in Random and Complex Media, 2019. 29 (2): p. 328-343.
28.	<i>A DPL model of photo-thermal interaction in an infinite semiconductor material containing a spherical hole</i>	European Physical Journal Plus, 2018. 133 (1).
29.	<i>Analytical Solutions of Plasma and Thermoelastic Waves Photogenerated by a Focused Laser Beam in a Semiconductor Material.</i>	Silicon, 2018. 10 (6): p. 2609-2616.
30.	<i>Analytical solutions of photo-thermo-elastic waves in a non-homogenous semiconducting material</i>	Results in Physics, 2018. 10 : p. 385-390.
31.	<i>Analytical Solutions of a Two-Dimensional Generalized Thermoelastic Diffusions Problem Due to Laser Pulse</i>	Iranian Journal of Science and Technology - Transactions of Mechanical Engineering, 2018. 42 (1): p. 57-71.
32.	<i>Analytical and numerical solution of 2D problem for transversely isotropic generalized thermoelastic medium with Green-Naghdi model II.</i>	Journal of Acoustics and Vibrations, 2018. 23 (3): p. 294-301.



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33.	Two-Temperature Photo thermal Interactions in a Semiconducting Material with a 3D Spherical Cavity.	Physical Mesomechanics, 2019. 22(4): p. 327-332.
34.	Thermomechanical response in a two-dimension porous medium subjected to thermal loading	International Journal of Numerical Methods for Heat and Fluid Flow, 2020. 22(7): p. 4103-4117.
35.	Thermal response of cylindrical tissue induced by laser irradiation with experimental study.	International Journal of Numerical Methods for Heat and Fluid Flow, 2020. 22(7): p. 4013-4023.
36.	Photo-thermo-elastic interactions without energy dissipation in a semiconductor half-space.	Results in Physics, 2019. 15.
37.	A GN model on photothermal interactions in a two-dimensions semiconductor half space.	Results in Physics, 2019. 15.
38.	Global properties of latent virus dynamics with B-cell impairment	AIP Advances, 2019. 9(9).
39.	Generalized thermoelastic interaction in a two-dimensional porous medium under dual phase lag model	International Journal of Numerical Methods for Heat and Fluid Flow, 2020. 30(11): p. 4865-4881.
40.	Fractional Order Thermoelastic Wave Assessment in a Nanoscale Beam Using the Eigenvalue Technique	Strength of Materials, 2019. 51(3): p. 427-438.
41.	Eigenvalue approach for generalized thermoelastic porous medium under the effect of thermal loading due to a laser pulse in DPL model.	Indian Journal of Physics, 2019. 93(12): p. 1567-1578.
42.	Dynamical behavior and solution of nonlinear difference equation via Fibonacci sequence. Journal of Applied Analysis and Computation, 2020. 10(1): p. 282-296.	Journal of Applied Analysis and Computation, 2020. 10(1): p. 282-296.
43.	An analytical study on the fractional transient heating within the skin tissue during the thermal therapy	Journal of Thermal Biology, 2019. 82: p. 229-233.
44.	Analytical solutions of thermal damage in living tissues due to laser irradiation	Waves in Random and Complex Media, 2021. 31(6): p. 1443-1456.
45.	Analytical solutions of fractional bioheat model in a spherical tissue	Mechanics Based Design of Structures and Machines, 2021. 49(3): p. 430-439.
46.	Analytical estimations of temperature in a living tissue generated by laser irradiation using experimental data	Journal of Thermal Biology, 2019. 85.
47.	Three-phase lag model of thermo-elastic interaction in a 2D porous material due to pulse heat flux	International Journal of Numerical Methods for Heat and Fluid Flow, 2020. 30(12): p. 5191-5207.
48.	The thermomechanical response of a poroelastic medium with two thermal relaxation times	Multidiscipline Modeling in Materials and Structures, 2021. 17(2): p. 493-506.
49.	A study on photo-thermo-elastic wave in a semi-conductor material	Alexandria Engineering Journal, 2021. 60(2): p. 2033-2040.



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caused by ramp-type heating	
50. <i>A study of deformations in a thermoelastic dipolar body with voids</i>	. Symmetry, 2020. 12 (2).
51. <i>Some Backward in Time Results for Thermoelastic Dipolar Structures</i>	Frontiers in Physics, 2020. 8 .
52. <i>Photo-thermal interactions in a semiconducting media with a spherical cavity under hyperbolic two-temperature model</i>	Mathematics, 2020. 8 (4).
53. <i>Nonlinear analysis of dual-phase lag bio-heat model in living tissues induced by laser irradiation</i>	Journal of Thermal Stresses, 2020. 43 (4): p. 503-511.
54. <i>Global stability of an adaptive immunity HIV dynamics model with silent and active cell-to-cell transmissions</i>	AIP Advances, 2020. 10 (8).
55. <i>A GL model on thermo-elastic interaction in a poroelastic material using finite element method.</i>	Symmetry, 2020. 12 (3).
56. <i>Generalized Thermoelastic Interactions in a Poroelastic Material Without Energy Dissipations</i>	International Journal of Thermophysics, 2020. 41 (7).
57. <i>Fractional-order thermoelastic wave assessment in a two-dimensional fiber-reinforced anisotropic material.</i>	Mathematics, 2020. 8 (9).
58. <i>Fractional order thermoelastic wave assessment in a two-dimension medium with voids</i>	Geomechanics and Engineering, 2020. 21 (1): p. 85-93.
59. <i>Fractional Order GN Model on Photo-Thermal Interaction in a Semiconductor Plane</i>	Silicon, 2020. 12 (8): p. 1957-1964.
60. <i>Fractional order gl model on thermoelastic interaction in porous media due to pulse heat flux</i>	Geomechanics and Engineering, 2020. 23 (3): p. 217-225.
61. <i>Finite element analyses of nonlinear DPL bioheat model in spherical tissues using experimental data</i>	Mechanics Based Design of Structures and Machines, 2020.
62. <i>An eigenvalues approach for a two-dimensional porous medium based upon weak, normal and strong thermal conductivities</i>	Symmetry, 2020. 12 (5).
63. <i>The effects of thermal relaxation time in a two-dimension porous medium due to thermal loading.</i>	Waves in Random and Complex Media, 2020.
64. <i>The effect of fractional time derivative of bioheat model in skin tissue induced to laser irradiation.</i>	Symmetry, 2020. 12 (4): p. 1-10.
65. <i>The effect of a hyperbolic two-temperature model with and without energy dissipation in a semiconductor material.</i>	Mathematics, 2020. 8 (10): p. 1-11.
66. <i>A Dual-Phase-Lag Model of Photothermoelastic Waves in a Two-Dimensional Semiconducting Medium.</i>	Physical Mesomechanics, 2020. 23 (2): p. 167-175.
67. <i>An analytical solution of the bioheat model in a spherical tissue due</i>	Indian Journal of Physics, 2020. 94 (9): p. 1329-1334.



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68.	<i>Analytical estimation of temperature in living tissues using the TPL bioheat model with experimental verification</i>	Mathematics, 2020. 8(7).
69.	<i>Analysis of Photo-Thermo-Elastic Response in a Semiconductor Media due to Moving Heat Source</i>	Physical Mesomechanics, 2020. 23(4): p. 354-361.
70.	<i>A study on thermoelastic interactions in fiber-reinforced mediums containing spherical cavities</i>	Waves in Random and Complex Media, 2021.
71.	<i>A study on thermo-elastic interactions in 2D porous media with- without energy dissipation.</i>	Steel and Composite Structures, 2021. 38(5): p. 523-531.
72.	<i>A Study of Photo-Thermoelastic Wave in Semiconductor Materials with Spherical Holes Using Analytical-Numerical Methods</i>	Silicon, 2021.
73.	<i>A numerical solution of nonlinear DPL bioheat model in biological tissue due to laser irradiations</i>	Indian Journal of Physics, 2021.
74.	<i>A hyperbolic two-temperature photo-thermal interactions in a semiconductor material</i>	Indian Journal of Physics, 2021. 95(10): p. 2057-2062.
75.	<i>Hyperbolic Two-Temperature Photo-Thermal Interaction in a Semiconductor Medium with a Cylindrical Cavity</i>	Silicon, 2021. 13(6): p. 1871-1878.
76.	<i>A GL photo-thermal theory upon new hyperbolic two-temperatures in a semiconductor material</i>	Waves in Random and Complex Media, 2021.
77.	<i>Generalized thermoelastic interaction in a two-dimensional orthotropic material caused by a pulse heat flux</i>	Waves in Random and Complex Media, 2021.
78.	<i>Generalized thermo-elastic interaction in a fiber-reinforced material with spherical holes</i>	Structural Engineering and Mechanics, 2021. 78(3): p. 297-303.
79.	<i>Generalized magneto-thermo-microstretch elastic solid with finite element method under the effect of gravity via different theories</i>	Geomechanics and Engineering, 2021. 27(1): p. 45-55.
80.	<i>Finite element analysis of thermal-diffusions problem for unbounded elastic medium containing spherical cavity under dpl model</i>	Mathematics, 2021. 9(21).
81.	<i>Finite element analysis of nonlinear bioheat model in skin tissue due to external thermal source</i>	Mathematics, 2021. 9(13).
82.	<i>The effects of fractional time derivatives in porothermoelastic materials using finite element method.</i>	Mathematics, 2021. 9(14).
83.	<i>The effect of fractional time derivative on two-dimension porous materials due to pulse heat flux.</i>	Mathematics, 2021. 9(3): p. 1-14.
84.	<i>A dual-phase-lag theory of thermal wave in a porothermoelastic</i>	Structural Engineering and Mechanics, 2021. 79(1): p. 1-8.



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nanoscale material by FEM	
85. Analytical-numerical solutions of photo-thermal interactions in semiconductor materials	Information Sciences Letters, 2021. 10 (2): p. 189-196.
86. Analytical solutions of the temperature increment in skin tissues caused by moving heating sources	Steel and Composite Structures, 2021. 40 (4): p. 511-516.
87. Analytical solutions of photo-thermal interaction in a semiconductor medium upon the new hyperbolic two-temperature theory	Waves in Random and Complex Media, 2021.
88. 2-D Problem of micropolar thermoelastic rotating medium with eigenvalue approach under the three-phase-lag model	Waves in Random and Complex Media, 2021.
89. Plane waves and eigenfrequency study in a transversely isotropic magneto-thermoelastic medium under the effect of a constant angular velocity	Journal of Thermal Stresses, 2017. 40 (9): p. 1079-1092.
90. Analytical and computational solution of three-dimensional thermoelastic interactions in porous material with temperature-dependent prope	Journal of Computational and Theoretical Nanoscience, 2017. 14 (8): p. 4021-4033.
91. New Studies on the Fock Space Associated to the Generalized Airy Operator and Applications	Complex Analysis and Operator Theory, 2018. 12 (7): p. 1549-1566.
92. Shear horizontal waves in composite materials: Behavior under rotation and initial stress	Mathematics and Mechanics of Solids, 2019. 24 (1): p. 85-97.
93. Fractional Order Thermoelastic Wave Assessment in a Nanoscale Beam Using the Eigenvalue Technique	Strength of Materials, 2019. 51 (3): p. 427-438.
94. The reflection phenomena of SV-waves in a generalized thermoelastic medium	International Journal of Mathematics and Mathematical Sciences, 2020. 23 (8): p. 529-546.
95. Reflection of plane waves in thermoelastic microstructured materials under the influence of gravitation	Continuum Mechanics and Thermodynamics, 2020. 32 (3): p. 803-815.
96. Plane Waves Transmission and Reflection at the Interface Between Thermoelastic Continua in Absence of Dissipation	The Influence of Magnetic Field and Rotation, in Advanced Structured Materials. 2020. p. 235-266.
97. Photothermal and void effect of a semiconductor rotational medium based on Lord-Shulman theory	Mechanics Based Design of Structures and Machines, 2020.
98. Effect of heat laser pulse on wave propagation of generalized thermoelastic micropolar medium with energy dissipation.	Indian Journal of Physics, 2020. 94 (3): p. 309-317.