Kenneth L.Kuttler,Jr.
Department of Math
Brigham Young University
Provo, Utah 84602
Home: 801-358-4668
Work: 801-422-4756

EDUCATION

1981 The University of Texas at Austin
Ph.D. in Mathematics
Dissertation -"Degenerate Evolution Equations and Inequalities"
1976 Brigham Young University
M.S. in Mathematics
1974 Brigham Young University
B.S. in Mathematics

PROFESSIONAL EXPERIENCE

1999- present Professor Brigham Young University
1998-1999 Visiting Professor Brigham Young University
1994- 1998 Associate Professor Michigan Technological University
1993 - 1994 Visiting Associate Professor Brigham Young University
1989-1993 Associate Professor Michigan Technological University
1983 - 1989 Assistant Professor Michigan Technological University
1982 - 1983 Assistant Professor University of Oklahoma - Norman
1981 - 1982 Visiting Professor Michigan Technological University

CLASSES TAUGHT

Classes taught include Calculus, Differential Equations, Statistics, Real Analysis, Linear Algebra, Vector Analysis, Matrix theory, Partial Differential Equations, Functional Analysis, Advanced Calculus, Complex analysis, and General Topology. I especially enjoy teaching graduate courses in analysis including measure and integration and have written two books which include this material.

SERVICE

Hiring committee
Calculus committee
Colloquium Chairman
Computational Math Committee
Freshmen and Sophomore Advisor
Promotions and Tenure Committee
Applied Math Committee
Instructional Policy Committee
Assesment Committee
Curiculum Committee
Reviewer for Mathematical Reviews
Reviewed NSF Grant Proposals

TALKS GIVEN

April 2016 University of Utah
September 2014 At a conference at Oakland University
March 2011 At a conference in Iowa
Winter 2010 At Oakland University
Summer 2008 at AIMS conference.
April 2000 Talk given at a special session of AMS at Lafayette La.
Nov. 1995 colloquium talk at Wayne State and Oakland U.
Sept. 1995 colloquium talk at M.T.U.
Feb 1994 Brigham Young University, Provo UT
1989 AMS Meeting, Phoenix AZ
1988 MAA Meeting at Northern Michigan University
Oct 1988 MAA Meeting at Michigan Tech. University
1987 Workshop on Nonlinear P.D.E., Brigham Young University
July 1985 SIAM Meeting, Pittsburgh PA
Nov 1984 AMS Meeting, Minneapolis MN
Aug 1983 Mechanics of Dislocations Symposium, M.T.U.
Mar 1983 AMS Meeting, Norman OK
Jan 1982 AMS Meeting, Cincinnati OH

RESEARCH IN PROGRESS

I am currently working on some general results for nonlinear stochastic evolution equations and inclusions.

REFERENCES

Meir Shillor, Professor
Dept. of Mathematical Sciences,
Oakland University,
Rochester, MI 48309
shillor@oakland.edu

Kenning Lu, Professor
Dept. of Math
Brigham Young University
Provo, Utah 84602
klu@math.byu.edu

Denise Halvorsen, Professor
Dept. of Math
Brigham Young University
Provo, Utah 84602
deniseh@math.byu.edu

PUBLICATIONS

1. A Degenerate Nonlinear Cauchy Problem, *Applicable Analysis, 13 (1982), 307-322.*
2. Implicit Evolution Equations *Applicable Analysis, 16 (1983), 91-99.*
3. Degenerate Variational Inequalities of Evolution, *Journal of Nonlinear Analysis: Theory Methods and Applications, 8 (1984), 837-850.*
4. The Galerkin Method and Degenerate Evolution Equations, *Journal of Mathematical Analysis and Applications, 107(1985), 396-413.*
5. The Solution of an Evolution Equation Describing Certain Types of Mechanical and Chemical Interaction with J.W. Hilgers and T.H. Courtney, *Applicable Analysis,19 (1985), 75-88.*
6. Time Dependent Implicit Evolution Equations , *Nonlinear Analysis: Theory Methods and Applications, 10, No.5(1986),447-463.*
7. Initial Boundary Value Problems for some Nonlinear Conservation Laws with D.L. Hicks, *Applicable Analysis, 24 (1987),1-12.*
8. Some Progress on the Hydrocode Convergence Problem with D.L.Hicks *Applied Mathematics and Computation, 23, No.3 (1987), 211-233.*
9. Regularity of Weak Solutions of Some Nonlinear Conservation Laws, *Applicable Analysis, 26 (1987).*
10. Weak Solutions of Initial Boundary Value Problems for a class of Nonlinear Viscoelastic Equations with D.L. Hicks, *Applicable Analysis, 26 (1987),33-43.*
11. Existence and Uniqueness in Non Classical Diffusion with E.C. Aifantis *Quarterly of Applied Mathematics, 45, No. 3 (1987).*
12. Quasilinear Evolution Equations in Non Classical Diffusion with E.C. Aifantis *SIAM Journal of Mathematical Analysis, 19, issue 1 (1988).*
13. Continuum and Discrete Hydrodynamical Models, convergence and Globally Well Posed Problems with D.L.Hicks, *Applied Mathematics and Computation, 25 (1988) pp. 299-320.*
14. Initial Boundary Value Problems for the Equation $u_{tt} = (\alpha(u_x)u_{xt})_x + \sigma(u_x)_x + f$, with D.L. Hicks, *Quarterly of Applied Math, Vol. 46, No. 3 (1988), pp. 393-407.*
15. Globally Well Posed Initial Boundary Value Problems for a Discrete Hydrodynamical Model, Part 2: Velocity Boundary Conditions, with D.L. Hicks. *Math. Comput. Modeling, Vol. 12, No. 8 (1990), pp. 959-966.*
16. Initial Boundary Value Problems for the Displacement in an Isothermal Viscous Gas. *Journal of Nonlinear Analysis, Theory, Methods and Applications, Vol. 15, No. 7 (1990), pp. 601-623.*
17. On the Thermodynamic Theory of Fluid Interfaces: Infinite Intervals, Equilibrium Solutions and Minimizers, with E.C. Aifantis. *Journal of Colloid and Interface Science, Vol. 138, No. 1 (1990), pp. 280-281.*

18. Existence, Uniqueness and Long-Time Behavior of Materials with Non- Monotone Equations of State and Higher Order Gradients, with E.C. Aifantis. *Quarterly of Applied Math, Vol. 48, No. 3 (1990), pp. 473-489.*

19. The One-Dimensional Displacement in an Isothermal Viscous Compressible Fluid with a non-monotone Equation of State, with D.L. Hicks. *Rocky Mountain Journal of Math, Vol. 21, No.2 (1991).*

20. Regularity of the Displacement in a One-Dimensional Viscoelastic Material. *Nonlinear Analysis, Theory, Methods and Applications., Vol. 17, No. 1 (1991), pp. 95-104.*

21. Globally Well-posed Initial Boundary Value Problems for a Discrete Hydrodynamical Model: Stress Boundary Conditions, with D.L. Hicks. *J. Math and Computer Modeling. Vol. 17, No. 3, pp 107-113 (1993).*

22. A One-Dimensional Thermoviscoelastic Contact Problem, with M. Shillor, *Advances in Mathematical Sciences and Applications. Vol. 4, no.1 (1994), pp. 141-159.*

23. Velocity Dependent Boundary Conditions for the Displacement in a One- Dimensional Viscoelastic Material. *Rocky Mountain Journal of Math. Vol. 24, No. 2, Spring 1994, pp. 579-613.*

24. A Dynamic Contact Problem in Viscoelasticity. *Advances in Mathematical Sciences and Applications. Vol. 4, No. 2 (May 1994) pp. 297-312.*

25. A Dynamic Contact problem in one Dimensional Thermoviscoelasticity, with M. Shillor, *Nonlinear World 2 (1995) pp. 355-385.*

26. Dynamic Friction Contact Problems for General Normal and Friction Laws. *Nonlinear Analysis Theory Methods and Applications*, (1997) Vol. 28, No. 3, pp. 559-575.

27. Second order Evolution Equations with Dynamic Boundary conditions with Andrews and Shillor *Journal of Math Analysis and Applications 197, pp. 781-795 (1996).*

28. One dimensional models of damage with Fremond, Nedjar, and Shillor, *Advances in Math. Science and . Applications*. no. 2 vol. 8 (1998), pp. 541-570.

29. On the Dynamic behavior of a Themoviscoelastic Body in Frictional Contact with a rigid obstacle. with Kevin Andrews and Meir Shillor. *European Journal of Applied Mathematics* (1997), vol.8, pp. 417-436.

30. *Modern Analysis*, CRC press. (1997)

31. Existence and Uniqueness of Solutions for a Dynamic One-Dimensional Damage Model. With Shillor *Journal of Mathematical Analysis and Applications* **229,** 271-294 (1999)

32. Set valued Pseudomonotone mappings and Degenerate Evolution inclusions. With Shillor. *Communications in Contemporary mathematics Vol. 1, No. 1 87-123 (1999)*

33. Models and Simulations of Dynamic Frictional Contact of a Beam. With Renard and Shillor *Computer Methods in Applied Mechanics and Engineering*, 177 (1999) pp. 259-272.special issue Computational Modeling in Contact and Friction, J.A.C. Martins and A. Klarbring (Eds.)

34. Wear of a Themoelastic Beam in Frictional contact. with M. Shillor and R.J.Gu *Journal of Math Analysis and Applications,* 242 (2000), 212-236.

35. Nondegenerate Implicit Evolution Inclusions, *Electronic Journal of Differential Equations,* Vol. 2000(2000), No. 34, 1-20, 12 May 2000.

36. Evolution Inclusions for time dependent families of subgradients *Applicable Analysis* Vol. 76 pp. 185-201 14 June 2000.

37. A dynamic model with friction and adhesion with applications to rocks. With Dumont Y Goeleven D. Rochdi M. and Shillor M. *Journal of Math Analysis and Applications,* 247, 2000 no. 1 87-109.

38. Unilateral Dynamic Contact of two beams, with Park, Shillor, and Zhang *Mathematical and Computer Modelling* 34 pp. 365-384 (2001).

39. Dynamic Bilateral Contact with Discontinuous Friction Coefficient with Shillor *Nonlinear Analysis* 45 pp. 309-327 2001.

40. Rocks interface problem including adhesion. Nonsmooth nonconvex Mechanics. Nonconvex Optim. Appl. 50 Kluwer Acad. Publ. Dordrecht 2001. pp. 69-82 With Dumont, Goeleven, Rochdi, and Shillor.

41. A Beam In Adhesive Contact. With Han W. Shillor. M. Sofonea M. Proceedings of third Contact mechanics International Symposium. (CMIS) Peniche, Portugal June 17-21, 2001.

42. Vibrations of a Beam in contact with two stops. with Shillor *Dynamics of Continuous, Discrete and Impulsive Systems. 8 (2001) no. 1 93-110*

43. One-Dimensional Dynamic Thermoviscoelastic Contact with Damage, With K.T. Andrews, M. Shillor, M. Rochdi. *J. Math. Anal. Appl.*, 272(2002), 249 - 275.

44. *Basic Analysis.* Rinton Press. November 2001.

45. Elastic beam in adhesive contact W. Han, K. L. Kuttler M. Shillor and M. Sofonea *International Journal of Solids and Structures.* 39 (2002) pp. 1145-1164.

46. Quasi-Static Thermoviscoelastic Contact Problem with Slip Dependent Friction Coefficient With A. Amassad, M. Rochdi and M. Shillor, *Mathematical and Computer Modelling*, 36, (2002) pp. 839-854.

47. Dynamic Contact with Normal Compliance Wear and Discontinuous Friction Coefficient. With Shillor. SIMA Vol. 34 #1 pp. 1-27, (2002).

48. J. Bajkowski, Fernandez, Kuttler, and M. Shillor, A thermoviscoelastic beam model for brakes," European. Journal of Applied Math. 15(2)(2004), 181-202

49. Thermoviscoelastic Beam Model for Brakes. With Shillor and Fernandez, Nonlinear Analysis 5 (2004) 857-880.

50. Analysis and Simulations of Vibrations of a Beam with a Slider with Dumont and Shillor. Journal of Engineering Mathematics 47 61-82. (2003)

51. K. L. Kuttler, Meir Shillor, Heat conduction with flux condition on a free patch, Journal of Applied Math. and Optimization., 50(2)(2004), 143-159

52. Dynamic contact with Signorini's condition and slip rate dependent friction, With Shillor Electron. J. Diff. Eqns., Vol. 2004(2004), No. 83, pp. 1-21.

53. Regularity of solutions to a dynamic frictionless contact problems with normal compliance, with Shillor Nonlinear Analysis 59 (2004) 1063-1075.

54. Existence and regularity for dynamic viscoelastic adhesive contact with damage, With Fernandez and Shillor. Appl. Math. Optim. 53 (2006), 31-66.

55. Quasistatic Evolution of Damage in an Elastic Body with Shillor. Nonlinear Analysis RWA, 7 (2006) 674-699.

56. Numerical analysis of a viscoelastic frictionless contact problem with adhesion and damage, With Fernandez and Shillor Comptes Rendus Mathematique vol. 341, Issue 1, 1July, 2005. pp. 63-68.

57. Thermoelastic Plate in Frictional Contact, with Shillor and Avalos. Bull. Math Soc. Sc. Math Roumanie Tome 48(96) No. 2, 2005.

58. Quasistatic evolution of damage in an elastic-viscoplastic material, Electron. J. Diff. Eqns., Vol. 2005(2005), No. 147, pp. 1-25.

59. Numerical Analysis and simulations of a dynamic frictionless contact problem with damage, with M. Campo, M.Shillor, J. Fernandez, and J. M. Viaño. CMAME. Computer methods in applied mechanics and engineering.

60. Quasistatic evolution of damage in an elastic body: numerical analysis and computational experiments. With Campo, Fernández and Shillor. Applied Numerical Mathematics 57 (2007) 975-988.

61. Dynamic frictional contact for elastic viscoplastic material, Electron. J. Diff. Eqns., Vol. 2007(2007), No. 75, pp. 1-20.

62. An elastic-viscoplastic quasistatic contact problem with damage, with Campo, J.R. Fernandez, computer methods in applied mechanics and engineering 196(2007) pp. 3219 - 3229.

63. An Elastic viscoplastic quasistatic contact problem: existence and uniqueness of a weak solution, with Campo and Fernandez. Archive Rational Mechanics and Analysis, 191, March (2009) 423-445.

64. An Existence and uniqueness result for an Elasto-piezoelectric problem with damage, with Fernandez. Mathematical Models and Methods in Aplied Sciences, Vol. 19, No. 1 pp. 31 -50. January 2009

65. Existence Results for Dynamic Adhesive Contact of a Rod. With Menike R.S.R. and Shillor M. Journal of math analysis and applications. 351, March (2009),781-791.

66. Dynamic analysis of two adhesively bonded rods. Ann. Acad. Room. Sci. Ser. Math Appl. 1 (2009) no. 3 217 - 233. With Nassar, Sayed A. and Shillor Meir.

67. Dynamic Adhesive Contact of a Membrane, With Menike R.S.R. and Shillor M. Zeitschrift für Analysis und ihre Anwendungen, Volume 29 (2010) page 1-20.

68. K. L. Kuttler, Meir Shillor and J. R. Fernandez, "Existence for the Thermoviscoelastic Thermistor Problem,"J. Diff. Eqn. Dyn. Systems, 17 (3) June 2009, 1-17.

69. Analysis of a dynamic frictional contact problem with damage, to appear in Finite elements in Analysis and Design. With Fernandez and Campo.

70. Two rods in dynamic adhesive contact, with Shillor, M. and Nassar A. Sayed. Annals of the Academy of Romanian Scientists Series on Mathematics and its Applications 1(1) (2009), 83-111.

71. A dynamic thermoviscoelastic problem: An existence and uniqueness result. With Fernandez J.R. Nonlinear Analysis 72 (2010), no. 11, 4124-4135. (This one makes use of my results for time dependent families of subgradients.)

72. Thermoviscoelastic problem: numerical analysis and computational experiments. Quart. J. Mech. Appl. Math 63 (2010), no. 3, 295-314. With Fernandez J. R.

73. An existence and uniqueness result for a strain-adaptive bone remodeling problem, An existence and uniqueness result for a strain-adaptive bone remodeling problem, Nonlinear analysis: Real World Applications, 12(2011) 288-294.

74. Calculus Theory and Applications, Volumes 1 and 2., World Scientific. Jan. -April 2011.

75. Analysis and Simulations of a Contact Problem for a Nonlinear Dynamic Beam with a Crack, with J. Purcell and M. Shillor. Quarterly Journal of mechanics and Applied Math 65 (2012), no. 1, 1-25.

76. Dynamic contact of two Gao beams, with Shillor M. and Jeongho Ahn, Electronic Journal of differential equations, Vol. 2012 (2012), No. 194, pp. 1-43.

77. Chapter in a Book, Computational Toxicology Volume II, Reisfeld, B. and Mayeno A. editors. pp. 429-475. Springer 2012.

78. Two Linear Algebra Books. These won the Saylor foundation textbook challenge for their linear algebra offerings. (2012) I continue to work on these. Since they are offered on line, one can constantly improve them. I plan to send a further improvement soon. See http://www.saylor.org/courses/ma211/ for the elementary linear algebra book. The more advanced one is also on their web site.

79. A precalculus book offered by worldwide center of math. This can be seen on http://www.centerofmath.org/textbooks/pre_calc/index.html (2012)

80. Linear Algebra With Applications, with Roger Baker, World Scientific March (2014). (311 pages)

81. Measurable solutions for stochastic evolution equations without uniqueness, with Ji Li, Applicable Analysis: An International Journal, 2015, Vol. 94, Issue 12, Pages 2456-2477. Appeared on line, Dec. 6 2014.

82. Existence for dynamic contact of a stochastic viscoelastic Gao Beam, with Shillor and Ji Li, Nonlinear analysis real world applications, Vol. 22 (2015), pages 568-580.

83. Generalized Stochastic Evolution Equations, with Ji Li, Journal of Differential Equations, 257(2014) no. 3, 816-842.

84. A model for the transmission of Chagas disease with random inputs. BIOMATH 3 (2014), no. 2 1411071, 16 pages. 92D30. With Shillor and seven others.

85. Kenneth L. Kuttler, Meir Shillor; Product measurability with applications to a stochastic contact problem with friction, Electron. J. Diff. Equ., Vol. 2014 (2014), No. 258, pp. 1-29.

86. Dynamic Gao Beam in Contact with a Reactive or Rigid Foundation, with Kevin Andrews, and Meir Shillor, in Advances in Mechanics and Mathematics 33 Springer (2015) April, pp. 225-247, Editors Weimin Han S. Migorski, and M. Sofonea.

87. Kenneth L. Kuttler, Ji Li, Meir Shillor; A general product measurability theorem with applications to variational inequalities, Electron. J. Diff. Equ., Vol. 2016 (2016), No. 90, pp. 1-12.

88. Andrews K., Kuttler, K. and Shillor M., Quasistatic evolution of damage in an elastic body with random inputs, to appear in Applicable Analysis as of 25 Sept. 2017. On line 12 Oct. http://dx.doi.org/10.1080/00036811.2017.1385063

89. Ahn J. Kuttler K. and Shillor M. Modeling, Analysis and Simulations of a Dynamic Thermoviscoelastic Rod-Beam System, Differential Equations and Dynamical Systems, 25(4), 527-552. Oct. 7 2017. DOI 10.1007/s12591-016-0301-2 http://link.springer.com/article/10.1007/s12591-016-0301-2

90. Kuttler K., Elementary Differential Equations, CRC Press 2018. 573 pages.

91. Kruk S., Pawel M. Kuttler, K. and Shillor M., Modeling, analysis and simulations of debonding of bonded rod-beam system caused by humidity and thermal effects, Electron. J. Differential Equations, Vol. 2017 (2017), No. 301, pp. 1-42. (Long and very technical paper.)