May 31, 2009

CURRICULUM VITAE: REUVEN SEGEV

PERSONAL DETAILS

Date and place of birth:	June 22, 1954, Tel-Aviv, Israel
Marital status:	Married, 4 children
Citizenship:	Israeli
E-mail address:	rsegev@bgu.ac.il
Web page:	www.bgu.ac.il/~rsegev
Business Address:	Department of Mechanical Engineering, Ben-Gurion University, Beer-Sheva 84105, Israel, Phone: 08 6477108
Home Address:	16 Sitvanit Street, Beer-Sheva 84848, Israel, Phone: 08 627 0564

EMPLOYMENT HISTORY

2004 – PRESENT, Professor, Holder of the H. Greenhill Chair in Theoretical and Applied Mechanics, Department of Mechanical Engineering, Ben-Gurion University.

2008 – 2009, Visiting Scholar, Department of Mechanical and Aerospace Engineering, University of California, San-Diego, on sabbatical leave from Ben-Gurion University.

2003 – 2008, Chairman, Department of Mechanical Engineering, Ben-Gurion University.

1991 – 2004, Associate Professor, Department of Mechanical Engineering, Ben-Gurion University.

1995 – 1996, Sabbatical leave from Ben-Gurion University at the University of Calgary.

1987 – 1988, Fellow by Courtesy, Rational Mechanics, Johns Hopkins University (on sabbatical from Ben-Gurion University).

1986 – 1991, Senior Lecturer (tenured since 1987), Department of Mechanical Engineering, Ben-Gurion University.

1981 – 1986, Lecturer, Department of Mechanical Engineering, Ben-Gurion University.

EDUCATION

Bachelor of Science, 1972 – 1976, Ben-Gurion University, Department of Mechanical Engineering (with distinction).

Master of Science, 1976 – 1978, Ben-Gurion University, Department of Mechanical Engineering, Advisor: Prof. S. Rautu, Thesis: "Dynamic Instability of Structures by Finite Elements".

Doctor of Philosophy, 1978 – 1981, The University of Calgary, Department of Mechanical Engineering, Advisor: Prof. M. Epstein, Thesis: "Differentiable Manifolds and Some Basic Notions of Continuum Mechanics".

POSITIONS IN ACADEMIC ADMINISTRATION

2003 – 2008, Chairman, Department of Mechanical Engineering, Ben-Gurion University.

2006 – 2008, A member of the promotions committee of the Faculty of Health Sciences (The senate's representative).

1999 – 2000, Vice-Chairman, Department of Mechanical Engineering Ben-Gurion University.

1992 – 1995, Chairman of the Paul Ivanier Center for Robotics Research and Production Management, Ben-Gurion University

1994 – 1995, Chairman of the undergraduate studies committee, Department of Mechanical Engineering, Ben-Gurion University.

1998, Chairman of the graduate studies committee, Department of Mechanical Engineering, Ben-Gurion University.

1991 – present, Member of the admission committee, Medical School, Ben-Gurion University.

RESEARCH FELLOWSHIPS AND AWARDS

2004 – present, H. Greenhill Chair Professor in Theoretical and Applied Mechanics.

Summer 1993, Visiting Professor, University of Pisa, Visiting Scientists Program, Italian National Research Council.

Summer 1990, Visiting Professor, University of Pisa, Visiting Scientists Program, Italian National Research Council.

1986 – 1988, Fellow of the Bath-Sheva de Rothchild Foundation for the Advancement of Science in Israel, $10000.

OTHER PROFESSIONAL FUNCTIONS

2004 – present, Chair of the subcommittee of the Council for Higher Education for the accreditation of colleges applying for a B.Sc. degree in Mechanical Engineering.

Member of the Editorial Committee of the ESDA08 (European branch of the ASME) conference to be held in the Technion June 2008.

Member of the Organizing Committee, 30th Israeli Conference on Mechanical Engineering, organized by the Department of Mechanical Engineering at B.G.U., May 2005.

Member of the Editorial Committee, 29th Israeli Conference on Mechanics Engineering, Technion, Haifa, 2003.

Member of the scientific committee, Current Ideas in Mechanics, Thermodynamics and Related Fields Conference, Berlin, September 2001.

1999, Organizer and member of the scientific committee, Current Ideas in Mechanics and Related Fields Conference, Jerusalem, August 1999.

PROFESSIONAL CONSULTING

1992, Baran, Makdimor, Advance Warning System for Drivers

1994, Mazor Lawyers, Dynamic Analyses of Crane.

1994 – 1997, Bromine Compounds, Vibrations of Structures

1998, Makhteshim, Vibrations of Structures

1998 – 1999, Dead Sea Works, Self Excited Vibrations

2002 – 2003, Dead Sea Works, Vibrations in Power Plant

2005, Dead Sea Works, Failure of Fluid Bed Drier

MEMBERSHIP IN SCIENTIFIC SOCIETIES

1988 - present, The Society for Natural Philosophy.

1998 - present, The International Society of the Interaction of Mechanics and Mathematics.

COURSES TAUGHT

Statics	first year undergraduate	G.B.U.
Dynamics	second year undergraduate	B.G.U.
Strength of Materials I	second year undergraduate	B.G.U.
Strength of Materials II	third year undergraduate	B.G.U.
Theory of Vibrations	third year undergraduate	B.G.U.
Introduction to Continuum Mechanics	third year undergraduate	B.G.U.
Elasticity and Plasticity	fourth year undergraduate	B.G.U.
Kinematics and Dynamics of Robots	fourth year undergraduate	B.G.U.
Robotics	graduate course	Johns Hopkins U.
Continuum Mechanics	graduate course	B.G.U.
Finite Elements	graduate course	B.G.U.
Analytical Mechanics	graduate course	B.G.U.
Tensor Analysis	graduate course	B.G.U.
Functional Analysis to Mechanical Eng.	graduate course	B.G.U
Physics to medical students	Medical School	B.G.U.
Stochastic Processes	third year Communication. Eng.	B.G.U.

RESEARCH STUDENTS

Y. Cohen, M.Sc. thesis: "An Analysis of the Loads and Stresses for the Armored Personnel Carrier's Automatic Transmission Housing", 1987.

G. deBotton, M.Sc. thesis: "The Representation of a Force System by Stresses", 1989.

M. Arad, M.Sc. thesis: "Application of the Nonconforming Taylor Discretization Method to Two Dimensional Problems in Elasticity Theory", 1992.

E. Taragan, M.Sc. thesis: "Stresses in Mixture Theory", 1992.

E. Kochavi, Ph.D. thesis: "Nonconforming Taylor Discretization Method for Numerical Solution of Field Problems, 1994.

Y. Biton, M.Sc. thesis: "Processing of Laser Scanner Data" (with Eitan Gurewitch), 2000.

B. Greenberg, M.Sc. thesis: "Orientation Control of a Rigid Spacecraft" (with Amit Ailon), 2001.

G. Rodnay, Ph.D. thesis: "Cauchy's Flux Theorem in Light of Whitney's Geometric Integration Theory", 2002.

A. Lewinstein, M.Sc. thesis: "Control of an Autonomous Vehicle" (with Amit Ailon), 2002.

E. Nizri, Ph.D. thesis: "Data Structures for the Representation of the Dynamics of Mechanisms", 2005.

L. Falach, M.Sc. thesis: "Optimal Stress and Load Capacity of a Structure: Theory, Algorithms and Applications", 2008.

Y. Levinson, M.Sc. thesis: "On the Kinematics of the Octopus's Arm", 2008.

RESEARCH GRANTS

2006 – 2009, B.G.U.-N.R.C.N VATAT grant, "Advanced Solutions for Accurate Machine Tools and Measurement Systems", NIS70,000 annual budget.

2003 – 2004, Israel Ministry of Education, "Engineering Science: Robotic Systems and Analogies Book", NIS349,800.

2001 – 2003, Israel Ministry of Education, "Engineering Science for High-Schools", NIS400,000.

2001 – 2003, Ort, "Increasing Creativity in High School Technological Studies", NIS125,000.

1997 – 2002, Israel Ministry of Defense-Mafat, H. Guterman, Y. Edan and R. Segev "Autonomous Dirt-Road Vehicle", about $150,000 annually.

1997, Israel Ministry of Defense-Mafat, R. Segev, Y. Edan and H. Guterman, "Autonomous Dirt-Road Vehicle", $100,000.

LIST OF PUBLICATIONS

BOOKS

[1] R. Segev. *Dynamics of Particles and Rigid Bodies*. Published by the author, 1991. A textbook in Hebrew.

[2] R. Segev. *CmoMillon:* (Hebrew for "KindOfDictionary")*: A Phrase Book for the Jargon of Engineering*. Ort (in Hebrew), 2005.

CHAPTERS IN BOOKS AND COLLECTIVE VOLUMES

[1] R. Segev. Optimization for the balance equations. in Mathematical Modeling of Bodies with Complicated Bulk and Boundary Behavior, M. Silhavy, ed., *Quaderni de Matematica*, accepted for publication, 2007.

[2] R. Segev. Fluxes and flux-conjugate stresses. in *Advances in Multifield Theories of Continua with Microstructure*, G. Capriz and P. Mariano, eds., Birkhouser, Boston, Chapter 7, 2003.

[3] R. Segev and M. Epstein. On theories of growing bodies. in *Contemporary Research in the Mechanics and Mathematics of Materials*, R.C. Batra and M.F. Beatty eds., 1996.

[4] R. Segev. On the definition of forces in continuum mechanics. in Mathematical Theory of Dynamical Systems and Microphysics, A. Blaquiere and G. Leitmann eds., Academic Press, 341–357, 1984.

[5] R. Segev and M. Epstein. An invariant theory of stress and equilibrium. in *Mathematical Foundations of Elasticity* by J. Marsden and T.J. Hughes, 1983.

ARTICLES IN SCIENTIFIC JOURNALS

[1] R. Segev. Load capacity of bodies. *International Journal of Non-Linear Mechanics*, 42 (A special volume in memory of R. Rivlin):250–257, 2007.

[2] R. Peretz and R. Segev. Bounds on the trace mapping of *LD*-fields. *Computers and Mathematics with Applications*, 53:665–684, 2007.

[3] R. Segev. Generalized stress concentration factors. *Mathematics and Mechanics of Solids*, 11:479–493, 2006.

[4] R. Segev and G. DeBotton. On the norms of force functionals and stress representations. *Mathematics and Mechanics of Solids*, 11:229–250, 2005.

[5] R. Segev. Generalized stress concentration factors for equilibrated forces and stresses. *Journal of Elasticity*, 81:293–315, 2005.

[6] A. Ailon, R. Segev, and S. Arogeti. A simple velocity-free controller for attitude regulation of a spacecraft with time-delayed input functions. *IEEE Transactions on Automatic Control*, 49:125–130, 2004.

[7] G. Rodnay and R. Segev. Cauchy's flux theorem in light of geometric integration theory. *Journal of Elasticity*, 71 (a special volume in memory of C. Truesdell):183–203, 2003.

[8] R. Segev. Metric-independent analysis of the stress-energy tensor. *Journal of Mathematical Physics*, 43:3220–3231, 2002.

[9] R. Segev and G. Rodnay. Worldlines and body points associated with an extensive property. *International Journal of Non-Linear Mechanics*, 38:1–9, 2002.

[10] R. Segev and G. Rodnay. Interactions on manifolds and the construction of material structure. *International Journal for Solids and Structures*, 38:997–1018, 2001.

[11] R. Segev. A correction of an inconsistency in my paper "Cauchy's theorem on manifolds". *Journal of Elasticity*, 63:55–59, 2001.

[12] R. Segev. The geometry of Cauchy's fluxes. *Archive for Rational Mechanics and Analysis*, 154:183–198, 2000.

[13] R. Segev. Notes on stresses for manifolds. *Rendiconti del Seminario Matematico dell' Universita e del Politecnico di Torino*, 58:199–205, 2000.

[14] R. Segev and G. Rodnay. Divergences of stresses and the principle of virtual work on manifolds. *Technische Mechanik*, 20:129–136, 2000.

[15] R. Segev and G. Rodnay. Cauchy's theorem on manifolds. *Journal of Elasticity*, 56:129–144, 1999.

[16] R. Segev and G. Rodnay. On volumetric growth and material frames. *Extracta mathematicae*, 14:191–204, 1999.

[17] M. Arad, R. Segev, and G. Ben-Dor. Accuracy increase of finite difference calculations by means of differentiation of the partial differential equations and their boundary conditions. *Computers and Structures*, 64:541–552, 1997.

[18] R. Segev. On symmetrically growing bodies. *Extracta Mathematicae*, 12:261–271, 1997.

[19] R. Segev, E. Fried, and G. deBotton. Force theory for multiphase bodies. *Journal of Geometry and Physics*, 20:371–392, 1996.

[20] R. Segev. Growing bodies and the Eshelby tensor. *Meccanica*, 31:507–518, 1996.

[21] A. Ailon and R. Segev. A stable observer-based trajectory controller for asymptotic model matching of a rigid robot. *Journal of Optimization Theory and Applications*, 87:517–538, 1995.

[22] M. Arad, R. Segev, and G. Ben-Dor. Improved finite difference method for equilibrium problems based on differentiation of the partial differential equations and boundary conditions. *International Journal for Numerical Methods in Engineering*, 38:1381–1853, 1995.

[23] R. Segev and E. Fried. Kinematics of and forces on nonmaterial interfaces. *Mathematical Models and Methods in Applied Sciences*, 5:739–753, 1995.

[24] R. Segev. A geometrical framework for the statics of materials with microstructure. *Mathematical Models and Methods in Applied Sciences*, 6:871–897, 1994.

[25] E. Kochavi, R. Segev, and Y. Yomdin. Modified algorithms for nonconforming Taylor discretization. *Computers and Structures*, 15:969–979, 1993.

[26] E. Kochavi, R. Segev, and Y. Yomdin. Numerical solution of field problems by nonconforming Taylor discretization. *Applied Mathematical Modeling*, 15:152–157, 1991.

[27] R. Segev and G. DeBotton. On the consistency conditions for force systems. *International Journal of Nonlinear Mechanics*, 26:47–59, 1991.

[28] R. Segev. On statical theories and models. *Archive for Rational Mechanics and Analysis*, 111:211–223, 1990.

[29] R. Segev and E. Taragan. Stresses in mixture theory. *International Journal of Engineering Science*, 27:1497–1506, 1989.

[30] R. Segev. Locality and continuity in constitutive theory. *Archive for Rational Mechanics and Analysis*, 101:29–37, 1988.

[31] A. Ailon and R. Segev. Driving a linear constant system by a piecewise constant control. *International Journal of Control*, 47:815–825, 1988.

[32] R. Segev. Forces and the existence of stresses in invariant continuum mechanics. *Journal of Mathematical Physics*, 27:163–170, 1986.

[33] A. Ailon and R. Segev. Comments on exact control of linear systems with multiple control. *IEEE Transactions on Automatic Control*, 31:1081–1083, 1986.

[34] R. Segev. On the existence of stresses in continuum mechanics. *Israel Journal of Technology*, 23:75–78, 1986.

[35] R. Segev and A. Ailon. A geometrical setting for the Newtonian mechanics of robots. *Journal of the Franklin Institute*, 322:173–183, 1986.

[36] R. Segev. On intensive and extensive properties. *International Journal of Mechanical Engineering Education*, 14:151–152, 1986.

[37] R. Segev and Y. Pressburger. A simple geometric formulation of statics. *International Journal of Mechanical Engineering Education*, 14:235–245, 1986.

[38] M. Epstein and R. Segev. Differentiable manifolds and the principle of virtual work in continuum mechanics. *Journal of Mathematical Physics*, 21:1243–1245, 1980.

[39] S. Rautu and R. Segev. Computation of the dynamic instability regions of structures by the finite element method. *Journal de Mecanique Appliquee*, 3:327–340, 1979.

INVITED LECTURES

R. Segev, "Load Capacity of Bodies and Structures", 44th Technical Meeting of the Society for Engineering Science, Texas A&M U., Symposium honoring Bernard Coleman for receiving the Engineering Science Medal, October, 2007.

R. Segev, "Some Extensions and Analysis of Flux and Stress Theory", a series of lectures in a summer school on Structures of the Mechanics of Complex Bodies, Centro di Ricerca Matematica, Ennio De Giorgi Scuola Normale Superiore, Pisa, Italy, October 2007.

R. Segev, "Further Comments on Generalized Stress Concentration Factors", 41st Technical Meeting of the Society for Engineering Science, Lincoln, Nebraska, Symposium honoring K.R. Rajagopal, October, 2004.

R. Segev, "Notes on the Stress-Energy Tensor in Field Theories", 15th AIMETA - Italian National Congress of Theoretical and Applied Mechanics, Taormina, Italy, 2001.

R. Segev, "Differential Geometric Methods in Mechanics", a series of lectures at Texas A&M University, March, 2001.

R. Segev, "An Introduction to Variational Principles in Continuum Mechanics and Some of Their Applications", a series of lectures in the CISM Consolidating Course on Fundamentals of Mechanics, Szombathely, Hungary, 1990.

PRESENTATIONS OF PAPERS AT CONFERENCES

R. Segev, 2007, "Load Capacity of Bodies and Structures", The Interface between Atomistic and Continuum Theories, Joint meeting of the Society of Natural Philosophy and the Institute for Mathematics and Applications, University of Houston, October 26 – 28.

R. Segev, 2007, "Optimal Stress Fields and Generalized Stress Concentration Factors", Geometry Continua and Microstructure 7, University of Lancaster, U.K., September 25 – 27.

R. Segev, 2006, "Notes on Generalized Stress Concentration Factors and Optimal Stress Fields", Meeting of the Israeli Society for Theoretical and Applied Mechanics, January 1.

R. Segev, 2006 "On Optimal Stress Fields and Generalized Stress Concentration Factors", International Symposium on Trends in Applications of Mathematics to Mechanics, STAMM-2006, Vienna University of Technology, July 10 – 14.

R. Segev and G. deBotton, 2006, "Stress Optimization for Structures", 15th U.S. National Congress on Theoretical and Applied Mechanics, University of Colorado at Boulder, June 25 – 30.

R. Segev, 2005, "On Optimal Stress Distributions", Meeting of the Society for Natural Philosophy, Bari, Italy.

R. Segev and R. Peretz, 2005, "Notes on Generalized Stress Concentration Factors and Bounds on Trace Operators", 17-th Italian Congress for Theoretical and Applied Mechanics, AIMETA2005, Florence, Italy.

R. Segev and R. Peretz, 2005, "Bounds on Optimal Stress Distributions", Twelveth Annual International Conference on Composites/Nano Engineering, Tenerife, Spain.

R. Segev, 2005, "On Generalized Stress Concentration Factors", Israel Conference of Mechanical Engineering, Tel-Aviv.

R. Segev, 2004, "Generalized Stress Concentration Factors", SES2004, Conference of the Society for Engineering Science, Lincoln, Nebraska.

R. Segev, 2004, "Generalized Stress Concentration Factors", ICTAM2004, International Congress for Theoretical and Applied Mechanics, Warsaw, Poland.

R. Segev, 2003, "Whitney's Geometric Integration Theory and Continuum Mechanics", Department of Mathematics, University of Kentucky, Lexington.

R. Segev, 2003, "On Generalized Stress Concentration Factors", 2003 - Meeting of the Society for Natural Philosophy, University of Kentucky, Lexington.

G. Rodnay and R. Segev, 2003, "Fluxes for Irregular Regions", 29th Israeli Conference on Mechanical Engineering, Technion, Haifa.

G. Rodnay and R. Segev, 2002, "Cauchy Fluxes and Geometric Integration Theory", STAMM2002 (Symposium on trends in applications of mathematics to mechanics), Maiori, Italy.

G. Rodnay and R. Segev, 2002, "Cauchy's Flux Theorem in Light of Geometric Integration Theory", Truesdell Memorial Symposium in The U.S. National Congress for Theoretical and Applied Mechanics, Virginia Tech., Blacksburg, Virginia.

R. Segev, 2001, "Flux Conjugate Stresses", Current Ideas in Mechanics, Thermodynamics and Related Fields (CIMRF) 2001, Berlin, Germany.

R. Segev and G. Rodnay, 2000, "On the Geometric Structure of Cauchy's Theory of Stresses", Mathematical Continuum Mechanics, Oberwolfach, Germany.

R. Segev and G. Rodnay, 2000, "On Worldlines and Material Elements Induced by Extensive Properties on General Manifolds", Symposium on Trends in Applications of Mathematics to Mechanics, O'Donoghue & Flavin, Galway, Ireland eds., Elsevier, pp. 192-197.

R. Segev and G. Rodnay, 2000, "Stresses for Bodies with Microstructure", 4th EUROMECH Solid Mechanics Conference, Metz, France.

R. Segev and G. Rodnay, 1999, "Geometrical Aspects of Stress Theory", Current Ideas in Mechanics and Related Fields 1999, Jerusalem.

R. Segev and G. Rodnay, 1999, "Geometrical Aspects of the Scalar Valued Balance Law", Third International Seminar on Geometry, Micro-Structure and Continuum Mechanics, Bad Herrenalb, Germany.

R. Segev and G. Rodnay, 1998, "Notes on the General Balance Law", 40th Meeting of the Society for Natural Philosophy, Carnegie Mellon Univ., Pittsburgh.

R. Segev and G. Rodnay, 1998, "On Continuum Kinematics of Volumetric Growth", Continuum Models and Discrete Systems (CMDS99), Proceedings of the 9th International Symposium, June 29-July 3, 1998, Istanbul Turkey, Inan and Markov eds., World Scientific 1999.

R. Segev and G. Rodnay, 1998, "On Volumetric Growth and Organisms", Second International Seminar on Geometry, Continua, and Microstructure, Universidad Carlos III de Madrid, Madrid, Spain.

R. Segev and M. Epstein, 1996, "On Theories of Growing Bodies", J.L. Ericksen Symposium on Recent Developments in Elasticity at the ASME Mechanics Materials Conference, Johns Hopkins University, Baltimore.

R. Segev, 1995, "Growing Bodies", Third Meeting on Current Ideas in Mechanics and Related Fields, Segovia, Spain,

R. Segev, E. Fried and G. deBotton, 1994, "Kinematics and Force Theory for Multiphase Bodies", 38th Annual Meeting of the Society for Natural Philosophy, Cornell Univ., Ithaca.

R. Segev, E. Fried and G. deBotton, 1994, "Some Geometrical Aspects of the Mechanical of Multiphase Bodies", The World of Shells, Banff, Canada.

R. Segev and E. Fried, 1993, "Kinematics and Force Theory for Evolving Interfaces", Annual Meeting of the SIAM, Philadelphia.

R. Segev and E. Taragan, 1992, "Stress Theory for Mixtures", Annual Meeting of the Society for Engineering Science, University of California, San Diego.

R. Segev, 1990, "A Generalization of the Cauchy Conditions", 34th Meeting of the Society for Natural Philosophy, University of Nebraska, Lincoln.

R. Segev, 1988, "A Weak Setting for the Theories of Forces and Stresses", 25th Anniversary Meeting of the Society for Natural Philosophy, Johns Hopkins University, Baltimore.

Ailon and R. Segev, 1986, "Bounds on the Time Response of a Multi-Link Mechanical System, Proceedings of the Japan-U.S.A. Symposium on Flexible Automation, Osaka, Japan.

R. Segev and A. Ailon, 1986, "Jet Locality as Implied by Body Self Determinism and Continuity", Proceedings of the International Conference on Computational Mechanics, Tokyo, G. Yagawa and S.N. Atluri eds., Springer-Verlag.

R. Segev, 1986, "A Variational Framework for nth Order Invariant Continuum Mechanics", Proceedings of the International Conference on Computational Mechanics, Tokyo, G. Yagawa and S.N. Atluri eds., Springer-Verlag.

R. Segev, 1985, "On the Existence of Stresses in Continuum Mechanics", 19th Israeli Congress of Mechanical Engineering, Ben-Gurion University, Beer Sheva.

R. Segev and M. Epstein, 1981, "Stress Field Representation of Local Forces", 17th Midwestern Mechanics Conference, University of Michigan, Ann Arbor.

M. Epstein and R. Segev, 1980, "On the Structure of Continuum Mechanics", 22nd Polish Solid Mechanics Conference, Giolun near Koscierzyna.

M. Epstein and R. Segev, 1980, "On the Principle of Virtual Work", 15th International Congress of Theoretical and Applied Mechanics, University of Toronto, August 1980.

S. Rautu and R. Segev, 1977, "Optimization of Foundations", Tenth Israeli Congress of Mechanical Engineering, Technion, Israel.

S. Rautu and R. Segev, 1977, "Optimum Cost of Foundations", Joint Applied Mechanics, Fluid Engineering and Bio-Engineering Conference, Yale University.