

CURRICULUM VITAE — YOSIBASH Zohar

FACULTY/SCHOOL Tel-Aviv Univ., Faculty of Engineering, School of Mechanical Eng.

DATE AND PLACE OF BIRTH Oct, 2, 1964 Bacau, Romania

DATE OF ARRIVAL IN ISRAEL July 1973

A. EDUCATION

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|---------|--|----------------------|---------------------------------|----------|
| 1983-87 | Technion, Haifa, Israel, | Aeronautical Engrg., | B.Sc.
<i>Cum Laude</i> | May 87. |
| 1988-92 | Tel Aviv Univ., Israel, | Applied Mathematics, | M.Sc.
<i>Summa Cum Laude</i> | May 92. |
| | Thesis title: <i>Super elements for singular 2-D elliptic boundary value problems.</i> | | | |
| | Supervisor: Prof. B. Schiff (deceased). | | | |
| 1992-94 | Washington Univ. in St. Louis, USA, | Mechanical Engrg., | D.Sc. | July 94. |
| | Thesis title: <i>Numerical analysis of singularities and first derivatives for elliptic BVPs in 2-D.</i> | | | |
| | Supervisor: Prof. B. Szabó. | | | |

B. ACADEMIC AND PROFESSIONAL EXPERIENCE

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|-----------------------|--|---------------------------------|
| 1994 - 1995 | Washington University, St. Louis, USA.
Mech. Eng.
Visiting assistant professor. | |
| Oct. 1995 - Sep. 1997 | Ben-Gurion Univ., Israel.
Mech. Eng.
Lecturer. | |
| Oct. 1997 - Sep. 2002 | Ben-Gurion Univ., Israel.
Mech. Eng.
Senior Lecturer. | |
| Nov. 1999 | Tenured at Ben-Gurion Univ., Israel. | |
| Aug. 2002 - Oct. 2007 | Brown Univ., Providence, RI, USA.
Sabbatical,
Visiting Associate Prof. of Research | Div. of Appl. Mathematics, |
| Oct. 2002 - Sep. 2008 | Ben-Gurion Univ., Israel.
Mech. Eng.
Associate Professor. | |
| Aug. 2010 - Feb. 2011 | Technical Univ. of Munich, Germany.
Sabbatical,
Visiting Prof. | Inst. of Computation in Engrg., |
| Oct. 2008 - Sep. 2017 | Ben-Gurion Univ., Israel.
Mech. Eng.
Professor. | |
| Oct. 2017 - Present | Tel-Aviv Univ., Israel.
School of Mech. Eng.
Professor. | |

C. INVITATIONS TO SCIENTIFIC MEETINGS

C.0) *Invited International Advanced Courses*

2020 *Advanced International School on Imaging, Modelling and Simulation in Biomechanics and Mechanobiology* - Rome, Italy, 24-28 Feb, 2020.

C.1) *Invited Lectures*

1998 *Numerical Analysis of Singularities Associated with Elliptic Problems by P-FEM* - International Conference on Spectral and High Order Methods, Herzliya, Israel, 22-27 June, 1998.

2005 *p-FEM analysis of singularities: Theory and application* - 5th GRACM international congress on computational mechanics, Limassol, Cyprus, 29 June - 1 July, 2005.

2013 *Extracting edge flux/stress intensity functions with the Quasi-Dual Function Method along circular 3-D edges* - Journées Singulieres Augmentees, Rennes, France, 26-30 August, 2013.

C.2) *Invited Keynote Lectures*

2002 *Failure Initiation in Electronic Devices - Analytical/Numerical/Experimental Aspects* - Weheraeus Seminar on Contact and Fracture Problems, Bad-Honnef, Germany, 27-29 May, 2002.

2005 *p-FEM for a Class of Finite Deformation Pressure Dependent Plasticity Models Validated by Experimental Observations* - 8th U.S. National Congress on Computational Mechanics, Texas, USA, 24-28, July 2005.

2010 *Circular edge singularities for the Laplace equation and the elasticity system in 3-D domains* - 6th Singular Days on Asymptotic Methods for PDEs, Weierstrass Institute for Applied Analysis and Stochastics, Berlin, Germany, 29 Apr - 1 May, 2010.

2012 *Reliable high-order finite element simulations of human femurs for clinical orthopedic applications* - WCCM XI: World Congress on Computational Mechanics, Sao Paulo, Brazil, 9-13 July, 2012.

2014 *Computational bone-mechanics on orthopedist's cell phone* - 3rd Workshop on Computational Engineering, Stuttgart, Germany, 6-10 Oct., 2014.

2016 *When 3-D edge singularities in linear elasticity meet the real world* - Eighth Singular Days, Nancy, Lorraine, France, June 27-30, 2016.

2016 *Reliability of p-FEA of human arteries validated by experimental observations* - WCCM XII 2016: World Congress on Computational Mechanics, Seoul, South Korea, 24-29 July, 2016.

2017 *3-D Edge Singularities in Linear Elasticity* - Numerics and mathematical analysis for singularities and eigenvalue problems, Rennes, France, 8-10 February, 2017

2019 *On the asymptotic solution of elliptic problems in the vicinity of curved singular edges in 3D domains* - IX Singular Days, Kassel, Germany, Sep 17-20, 2019.

C.3) *Invited lectures at conferences/workshops*

1998 *Application of hp-FEM for Boundary Layers and Eigenvalues Realization in Thin Elastic 3-D Domains and 2-D Plate Models* - High Order Finite Element Methods Workshop, Bad-Honnef, Germany, 16-18 March, 1998.

2000 *Extracting edge flux intensity functions using p-FEM*- 3-D Singularities in Elasticity Workshop, Karlsruhe University, Germany, 22-24 November, 2000.

2002 *Failure initiation criteria in linear elasticity*- 3eme Journees Singulieres Workshop, Le Trouchet, France, 29-31 August, 2002.

2002 *Computing Singular Characteristics of the Elliptic 2-D and 3-D Problems Using p-FEM* - Analytical and numerical treatment of singularities in PDE workshop, Oberwolfach, Germany, 3-9 November, 2002.

2003 *Fluid-structure interaction simulations based on p-FEM. Part I: From the solid mechanics perspective* - WE-Heraeus Seminar on Adaptivity in FE Analysis: Models, Meshes and Polynomial Orders, Bad-Honnef, Germany, 7-10 Sep, 2003.

2004 *Extracting edge stress/flux intensity functions by p-FEM*- 4eme Journees Singulieres Workshop, Abbayes des Premontres, Pont-a-Mousson, France, 7-9 June, 2004.

2006 *On edge singular solutions in polyhedra domains and extracting stress/flux intensity functions by p-FEM* - Fourth Israeli Mini-Workshop in Applied and Computational Mathematics, Tel-Aviv University, January, 3, 2006.

2006 *Edge Singular Solutions in Anisotropic Materials and Multi-material Interfaces* - International Workshop Research in Mechanics of Composites 2006, Bad Herrenalb, Germany, 26 - 29 November 2006.

2007 *Edge Singularities in Elastic Anisotropic Materials and Multi-material Interfaces* - 5eme Journees Singulieres Workshop, Luminy, France, 22-27 April, 2007.

2007 *p-FEM for a Class of Finite Deformation Pressure Dependent Plasticity Models Validated by Experimental Observations* - High Order Finite Element Methods Workshop, Herrsching, Germany, 17-19 May, 2007.

- 2007 *p-FEM for nonlinear static and dynamic problems in solid-mechanics* - International Conference on Spectral and High Order Methods, Beijing, China, 18-22 June, 2007.
- 2007 *Reliable p-FE analysis of the proximal femur validated by in-vitro experiments* - Workshop on Biomechanics at RICAM - Johann Radon Institute for Computational and Applied Mathematics, Austrian Academy of Sciences, Linz, Austria, 13-14 Dec, 2007.
- 2008 *Tutorial on Computational Biomechanics* - ISCM 24 Workshop, Tel-Aviv, Israel, Apr. 4, 2008.
- 2009 *Reliable subject-specific CT-based p-FE analysis of the proximal femur* - Osteosynthesis and Trauma Care foundation workshop named Numerical Modeling and Trauma Care, Boston, USA, 14-16, June, 2009.
- 2010 *Predicting the fracture onset in the proximal femur using FEA?* - Osteosynthesis and Trauma Care foundation workshop named Numerical Modeling and Trauma Care, Boston, USA, 4-6, Dec, 2010.
- 2011 *p-FEMs for biomechanical applications: bones and arteries* - Higher Order Finite Element and Isogeometric Methods, Krakow, Poland, 27-29, June, 2011.
- 2012 *Simulating the mechanical response of arteries by p-FEMs* - High Order Numerical Approximation for Partial Differential Equations, Bonn, Germany, 6-10, February, 2012.
- 2012 *Feasibility of the clinical use of FE models in fracture prediction* - German Congress for Orthopaedics and Traumatology, Berlin, Germany, 24-26, October, 2012.
- 2013 *Extracting edge flux/stress intensity functions with the Quasi-Dual Function Method along circular 3-D edges* - Journees Singulieres Augmentees 2013, Rennes, France, 26-30, August, 2013.
- 2013 *Finite element simulations of patient-specific long bones for clinical orthopedic applications* - International CAE Conference, Pacengo del Garda (Verona), Italy, 21-22, October, 2013.
- 2014 *p-FEMs for thermo-hyperelasticity at finite strains with uncertainty quantification* - HOFEM 2014, Frauenchiemsee Island, Germany, 15-18, July, 2014.
- 2015 *Failure criteria for brittle elastic V-notched structures: from 2-D mixed mode to 3-D* - Workshop honoring the retirement of prof. Dominique Leguillon, Univ. Pierre and Marie Curie, Paris, 11-12, June, 2015.
- 2015 *Biomechanics and Mathematics* - Workshop on the occasion of 10th anniversary of the biomechanics institute, Murnau, Murnau, Germany, 11, Sept, 2015.

2018 *Patient specific CT-based FEA of femurs with metastatic tumors - A leap to clinical practice*
- Workshop on Advanced Computational Modeling for Tumor Growth Prediction, IAS -
Technical University of Munich, Germany, 24-25 Sept, 2018.

2019 *CT-based Autonomous FEs (AFE) - a leap to clinical practice* - HOFEIM 2019, Univ. of
Pavia, Italy, 28-30, May, 2019.

C.4) Invited Seminars at Universities and Institutions

1992 Tel-Aviv university, Mechanical Engineering Dept., May 1992 - "Super elements for singular
two-dimensional elliptic boundary value problems".

1994 Technion, Mechanical Engineering Dept., June 1994 - "Numerical analysis of singular points".

1994 Tel-Aviv university, Applied Mathematics Dept., June 1994 - "Numerical analysis of BVPs".

1995 Washington University, Dept. of Mechanical Engineering, Sept. 95 - Invitation to a colloquium
on "Numerical analysis of singular points associated with linear elasticity problems in 2-D".

1995 University of Maryland Baltimore County, Dept. of Mathematics and Statistics, Sept. 95 -
Invitation to a colloquium on "Numerical analysis of singular points associated with linear
elliptic problems in 2-D".

1995 IACMM Information day, Dec. 1995 - "On the h-, p-, and hp-version of the FEM and their
application in linear elasticity problems".

1997 Stuttgart University, Germany, June 17,18,24, 1997 - Series of three seminars: "Fracture
Mechanics-Basics", "Extracting Eigen-Pairs and Generalized Stress Intensity Factors for 2-D
Domains Using FEM" and "Thermo-Elastic Extraction of Stress Intensity in 2-D and Edge
Singularities in 3-D".

1997 Technical University of Munich, Dept. of Civil Engineering, Germany, June 24, 1997 - "Anal-
ysis of Singular Points Associated with Linear Elasticity by the p-FEM".

1997 University of Rennes 1, Dept. of Mathematics, France, October 23, 1997 - "Analysis of
Singular Points Associated with Linear Elliptic Problems in Two-Dimensions".

1998 Washington University, Dept. of Mechanical Engineering, Sept. 98 - Invitation to a colloquium
on "Boundary Layer Realization in Thin Elastic 3-D Domains and 2-D Hierarchic Plate
Models".

- 1999 Stuttgart University, Mathematic Institute A, Germany, July 15 1999 - Invitation to a colloquium on “Extracting Certain Quantities Associated with Edge Singularities of Elliptic BVPs in 3-D Domains by p-FEM”.
- 1999 Tech. Univ. Munich, Dept. of Civil Engineering, Germany, July 19 1999 - “p-Finite Element Methods as an Efficient Tool for: Automated Strength Analysis of Femur Bones, Boundary Layers in Plate Models and Cracks/Singular Edges in 3-D Analysis”.
- 2001 Tech. Univ. Munich, Dept. of Civil Engineering, Germany, Feb. 21, 2001 - “A unified criterion for failure initiation in electronic devices and structural components”.
- 2001 Math. Institute A, Stuttgart University, Germany, Feb. 22, 2001 - “A unified criterion for failure initiation in electronic devices and structural components”.
- 2002 Tel-Aviv university, Mechanical Engineering Dept., Apr. 8, 2002 - “Mechanical failures and singular solutions in elastic materials”.
- 2002 Division of Applied Mathematics, Brown University, Providence, USA, Apr. 19, 2002 - “Failure mechanisms and singular solutions in elastic materials”.
- 2003 Dept. of Mathematics, University of South Carolina, Columbia, Feb, 18-19, 2003 - Invitation to a seminar on “Application of hp-FEM for Boundary Layers and Eigen-frequency Realization in Thin Elastic 3-D Domains and 2-D Plate Models” and a colloquium on “Applied Math for Real Life Problems: Failure Initiation in Electronic Devices - Analytical/Numerical/Experimental Aspects”.
- 2003 Dept. of Mathematics and Statistics, University of Maryland Baltimore County, Feb, 21, 2003 - Colloquium on “Applied Math for Real Life Problems: Failure Initiation in Electronic Devices - Analytical/Numerical/Experimental Aspects”.
- 2004 Universitaet der Bundeswehr Muenchen, Institut fuer Mathematik und Bauinformatik, Feb, 20, 2004 - “Computing Singular Characteristics of Elliptic 2-D and 3-D Problems Using p-FEM”.
- 2005 Institute for Mechanics, University of Karlsruhe, Germany, Sept. 27, 2005 - “Failure criteria at singular points in elastic materials: Theory and Applications”.
- 2006 Tech. Univ. Munich, Dept. of Civil Engineering, Germany, Feb. 24, 2006 - “p-FE analysis of the human proximal femur compared to in-vitro experiments”.
- 2007 Afeka College of Engineering, Ramat-Aviv, Nov. 18, 2007 - “Simulation of the mechanical response of the human proximal femur by high order finite element methods validated by in-vitro experiments”.

- 2008 Weizmann Institute, Dept. of Structural Biology, Rehovot, Feb. 10, 2008 - "Simulation of the mechanical response of the human proximal femur by high order finite element methods validated by in-vitro experiments".
- 2008 Institut Jean Le Rond d'Alembert, Univ. Pierre & Marie Curie (Paris 6), Paris, France, May 6, 2008 - "Reliable p-FE analysis of the proximal femur validated by in-vitro experiments".
- 2008 Technical University of Munich, Germany, Nov, 12, 2008 - "CAPSO - Computer Aided Patient Specific Orthopedics".
- 2008 Tel-Aviv University, School of Engineering, Dec. 22, 2008 - "Patient-specific simulation of the proximal femur's mechanical response validated by experimental observations".
- 2009 Clausthal Technical University, Chair of Technical Mechanics, Clausthal-Zedeller, Germany, Apr. 30, 2009 - "Patient-specific simulation of the proximal femur's mechanical response validated by experimental observations".
- 2009 Tel-Aviv University, Applied Mathematics Dept, June. 2, 2009 - "Edge singularities - Mathematics and Engineering applications".
- 2009 Technical University of Munich, Institute of Advanced Studies, Germany, Nov, 10, 2009 - "Computational Bone-Mechanics" - A patient-specific combined engineering/clinical treatment approach
- 2009 Technical University of Hamburg-Harburg, Ship structural design and analysis institute, Harburg, Germany, Nov, 13, 2009 - "Failure criteria at singular points in elastic materials: Theory and Applications".
- 2010 FerienAkademie, Sarntal, SudTirol, Italy - Sep. 19-23 - "Verification/Validation/Corroboration".
- 2011 Linz University (RICAM), Austria, Jan, 14, 2011 - "Simulating the mechanical response of artery walls by high order finite elements".
- 2011 Bavarian Graduate School of Computational Engineering, Munich, Germany, Jan, 20, 2011 - "An afternoon talk on human femurs - biomechanical experiments, modeling and numerical simulations".
- 2012 Technical University of Vienna, Dept. Mechanical Engrg, Biomechanics, Vienna, Austria, Oct, 30, 2012 - "Verification, validation and uncertainty quantification in bone biomechanics".
- 2015 Tel-Aviv University, Dept. Biomedical Engineering, April, 19, 2015 - "Towards Personalized Orthopedics".

2016 Tokyo University of Science, Dept. of Mechanical Engineering, Aug, 3, 2016 - “3D Cracks: Computing edge stress intensity functions in isotropic or anisotropic materials and multi-material interfaces”.

2018 Technion, Faculty of Aerospace Engineering, March, 28, 2018 - The 5th Annual Professor Singer Memorial Lecture: “An afternoon talk on bones, doctors and high order finite element methods”.

2018 Rafael, August, 6, 2018 - “The holy trinity in bone simulations”.

2018 Univ. of Pavia, Dept. Civil Engineering, Nov, 6, 2018 - “Patient specific CT-based FEA of femurs - A leap to clinical practice”.

2018 Polytechnic University of Torino, Dept. Civil Engineering, Nov, 9, 2018 - “Patient specific CT-based FEA of femurs - A leap to clinical practice”.

D. ACADEMIC AND PROFESSIONAL AWARDS

1995-96, PI, Israel Office of Science Absorption Grant.

1997, PI, DAAD Study Visit Grant to Germany (1 month).

1997-2000, CI, Israel Ministry of Science Grant on “Intelligent processing of materials using an ultrasonic sensor. Application to Hot Isostatic Pressing of materials”. (PI O. Yeheskel, CIs. M.P. Dariel, E. Kochavi).

1997-2001, PI, Vatat-VEA Grant on “Numerical simulation of a HIP process” (CI E. Kochavi).

1997-2002, PI, Vatat-VEA Grant on “Numerical simulation & metallurgical specification of metal forming process”, (CI E. Kochavi).

1999-2000, PI, Magnet - 0.25 μ Consorziium, Israel Ministry of Commerce, “Development of a simulation tool for the stress evolution in interconnects in VLSI circuits” - (CI R. Shneck).

2000, PI, Air Force Office of Scientific Research & US Army Research Office - grants for supporting the conference p-FEM2000 (CI M. Suri).

2000-2002, PI, Rotem Industries “Numerical simulation of Magnesium extrusion”.

2000-2008, PI, Vatat-VEA Grant on “Generalized failure criteria for brittle materials at singular points” (CI A. Busiba).

2002-2005, PI, GIF Grant on “p-FEM for a class of pressure dependent plasticity models with application to CIP processes”, (CIs E. Rank, S. Holzer, S. Hartmann, N. Frage).

2002-2004, PI, Rotem Industries “Numerical simulation of sapphire crystals growth” .

2002-2005, PI, BSF Grant on “Computer-aided analysis of cardiovascular lesions” - (CIs G. Karniadakis, A. Yakhot, S. Popel).

2004-2008, PI, Rotem Industries “Numerical simulation of Extrusion” .

2004-2008, PI, Hadassah Hospital & Hebrew Univ “Reliable mechanical simulation of the proximal femur” .

2005, PI, Rabin Medical Center “Mechanical response of Internal Mammary Arteries” .

2005-2008, PI, Vatat-VEA Grant on “Numerical simulation of geometrical distortion following machining ”, Two years funding granted (CI M. Szanto).

2007-2009, PI, REFAEL - “Numerical simulation of an angular extrusion process”, .

2007-2010, PI, ISF Grant on “Failures at edges and vertices in three-dimensional brittle elastic structures” .

2008, PI, Self-Fix “Simulations of self installed bolt”,.

2010-2012, PI, TUM-IAS Grant on “Bone FE analysis” .

2010-2014, PI, ISF Grant on “Fracture initiation along curved singular edges and/or vertices in three dimensional brittle elastic structures” .

2011-2013, CI, DFG Grant on “Electro-thermo-mechanical modeling of Field Assisted Sintering Technology using high-order finite elements validated by experiments” (PI E. Rank, CIs A. Duster, S. Hartmann, N. Frage).

2011-2013, PI, Ministry of Health, Chief Scientist Grant on “Novel computational methods for predicting bone fractures due to metastatic/benign tumors’.

2013-2014, CI, DFG Grant on “Electro-thermo-mechanical modeling of Field Assisted Sintering Technology using high-order finite elements validated by experiments” (PI E. Rank, A. CIs. Duster, S. Hartmann).

2013-2014, PI, MAFAT Grant on “Neck protector against blast and bullets” .

2013-2018, PI, MAFAT Grant on “Failures in Composite Materials” (CI Jacob Bortman).

2014-2016, PI, GIF Grant “Vasoreactive response of the skeletonized distal internal thoracic artery and bifurcation branches: Application for CABG ” (CIs G. Sahar, E. Rank and S. Hartmann).

2014-2018, PI, ISF Grant on “Failure initiation theories in 3-D domains under a complex stress field: Formulation and validation by experimental observations”.

2015, PI, ISF Grant to hold the HOFEIM conference in May 2016 (CI I. Harari).

2013-2018, PI, MSF Grant on “An orthopedic system for humerus bones”.

2018-2022, PI, ISF Grant on “Failure initiation criteria at sharp edges in 3-D domains with small scale damage - Formulation and experimental validation”.

2018-2020, PI, MAFAT Grant on “Failures in Composite Materials” .

2020-2020, PI, Stratasys Grant for experiments on printed bones .

2020-2024, PI, ITN Grant “NewFrac”, \$ 3.7M, of which my part is .

D.2) Fellowships

2002-2003, Sabbatical - Associate professor fellowship, Div. of Applied Mathematics, Brown University, Providence, USA. - Institute for Advanced Study, Tech Univ of Munich, Germany.

17 Apr. - 9 May 2008, French Science Foundation award for a visiting Professorship at Institut Jean Le Rond d’Alembert, Univ. Pierre Marie Curie (Paris 6), Paris, France.

2009-2012, Hans Fischer Senior Fellow - Institute for Advanced Study, Tech Univ of Munich, Germany.

D.3) Prizes

March, 1994, Among 6 best student papers on Finite Elements - Finalist at Robert J. Melosh Medal Competition, Duke Univ, USA.

Spr. 99, Fall 99, Outstanding Lecturer - Academic College Sapir - Engineering Section.

Fall 99, Outstanding Lecturer - Academic College Sapir - Software Systems Dept.

Aug 02 - July 03, IBM distinguished professorship at the Div. Applied Math, Brown University, Providence, RI, USA.

2009 Toronto prize for the “best researcher” in the faculty of engineering, Ben-Gurion University, Israel.

Dec 2013, Awarded the honorary title “TUM Ambassador” - “Through his outstanding research work he contributed to the international reputation of our (TUM) university”.

D.4) Invited (funded) Short Visits in Foreign Universities

May-June, 1997, Visiting researcher, Math. Institute A and Dept. of Civil Engineering Stuttgart University, Germany - DAAD grant.

Oct-Nov, 1997, Visiting Professor, CNRS - Dept. of Applied Mathematics, Universite de Rennes 1, Rennes, France - CNRS grant.

April, 2000, Visiting Professor, CNRS - Dept. of Applied Mathematics, Universite de Rennes 1, Rennes, France - CNRS grant.

Feb 2001, Visiting Professor, Dept. of Civil Eng., Technical University of Munich and Math. Institute A, Univ of Stuttgart, Germany - DAAD fellowship.

July-Aug 2004, Visiting Associate Professor of Research, Div. of Applied Math, Brown University, USA - ONR grant.

July-Aug 2005, Visiting Associate Professor of Research, Div. of Applied Math, Brown University, USA - ONR grant.

Sept. 25 -Oct. 2 2005, Visiting Professor, Institute for Mechanics, Karlsruhe University, Karlsruhe, Germany.

July-Aug 2006, Visiting Associate Professor of Research, Div. of Applied Math, Brown University, USA - ONR grant.

July-Aug 2011, Visiting Professor, Institute for Computation in Engineering, Technical Univ of Munich, Germany.

E. MEMBERSHIP IN PROFESSIONAL SOCIETIES

1994 - present, Tau Beta Pi Honor Society.

1994 - 2001, Member - Society for Industrial and Applied

1995 - present, Member - Israel Association for Computational Methods in Mechanics.

1996 - present, Member - International Association for Computational Mechanics.

2004 - 2014, Israel Society for Theoretical and Applied Mechanics. Mathematics.

2010 - 2012, ESIS: European Structural Integrity Society.

2014 - present, European Society of Biomechanics.

2014 - present, ESIS and ISIG.

F. SUPERVISION OF GRADUATE STUDENTS

F.1) Present PhD. Students

1. Started in June, 13 towards MSc, and approved to the combined PhD program in April, 15 - Expected 2020 Ms. Gal Dahan - Thesis subject: *The mechanical response of the human humerus by p-FEMs.*
2. Started June, 13 towards MSc. Meitar program, and approved to the combined PhD program in Nov, 15 - Expected 2020 - Mr. Yekutiel Katz - Awarded an excellence prize for ME project. Thesis subject: *Analysis of the mechanical response of the femurs with mechanical implants.*
3. Oct, 19 - Mrs. Shani Martinez Weisberg Thesis subject: *Biomechanical response of femurs with tumors and treatments.*

F.2) Present MSc. Students

1. Sept, 18 - Ms. Shirly Cherevatsky - Thesis subject: *Failure initiation in pultruded composites.*
2. Sept, 19 - Ms. Vered Mendelovich - Thesis subject: *Failure initiation at V-notch tips in materials with a SSY.*
3. Mar, 20 - Mr. Tamir Grunberg - Thesis subject: *FEA of Arteries.*
4. Mar, 20 - Ms. Sahar Benjamin - Thesis subject: *FEA of a spine segment.*
5. April, 20 - Ms. Leetal Eliahu - Thesis subject: *FEA of femurs in the context of multiple myeloma.*

F.3) PhD. Alumni

1. Oct, 03 - Dec, 07 - Dr. Netta Omer. Thesis subject: *Edge Singularities in 3-D Elastic Domains.*
2. Oct, 05 - Oct, 11. MSc combined PhD program - Dr. Nir Trabelsi - Recipient of Ben-Amitai Prize for excellence in MSc studies, 2007. Recipient of Tzin Fellowship for excellence in PhD studies, 2007-2011. Recipient of the first prize for the best presentation at Israel association of computational methods in mechanics among presenters at ISCM25-ISCM26, 2009. Thesis subject: *The mechanical response of the proximal femur.*
3. Jul, 07 - Oct, 11 - Dr. Elad Priel - Recipient of Ben-Amitai Prize for excellence in MSc studies, 2006. Recipient of Faran Fellowship for excellence in PhD studies, 2007-2011, Recipient of the first prize for the best presentation at Israel association of computational methods in mechanics among presenters at ISCM30-ISCM31, 2011. Recipient of Katzir Fellowship, 2011-2017. Thesis subject: *Finite element analysis of arteries.*
4. June, 09 - July, 15. MSc combined PhD program - Dr. Samuel Shannon - Recipient of Yakov Ben-Isaac HaCohen Prize for excellence in MSc studies, 2010. Recipient of Tzin Fellowship for excellence in PhD studies, 2011-2014. Thesis subject: *Singular solutions of elliptic boundary value problems along curved edges in 3-D domains.*
5. Oct, 10 - Mar, 15 - Dr. Brigit Mittelman - Thesis subject: *A Failure Initiation Criterion from a Sharp V-notch Edge in 3D Elastic Brittle Structures.*
6. July, 15 - Apr, 2020 - Mr. Yaron Schapira - Winner of the first prize for the best student presentation at the Sixth Israel Structural Integrity Group (ISIG) symposium held at Tel Aviv University (March 2017). Thesis subject: *Elastic solutions in the vicinity of 3-D singular edges.*

F.4) MSc. Alumni

1. Title conferred in July, 02 - Mr. Nir Rotem . Thesis subject: *Towards HIP Simulation by the FEM.*
2. Title conferred in Jan, 02 - Mr. Ofer Adan (Dr. Schneck co-supervisor). Thesis subject: *Failure initiation in Electronic Devices.*
3. Title conferred in Oct, 03 - Ms. Netta Omer - Recipient of Ben-Amitai Prize for excellence in MSc studies, 2003. Thesis subject: *Edge Flux Intensity Functions in 3-D Domains.*

4. Title conferred in Jan, 04 - Mr. Meidad Korengold (Dr. Szanto co-supervisor). Thesis subject: *Reliable simulation of a metal forming process.*
5. Title conferred in Oct, 04 - Ms. Elena Urman (co-supervisor with prof. Yakhot). *High order numerical methods for problems with singular points.*
6. Title conferred in June 05 - Mrs. Michal Peleg-Lubovsky. Thesis subject: *Constitutive laws for carotid arteries.*
7. Title conferred in Jan 06 - Mr. Royi Padan (Fedida) - Recipient of Wolf Prize for excellence in MSc studies, 2004. Thesis subject: *Towards a reliable mechanical simulation of the proximal femur.*
8. Title conferred in July 07 - Mr. Elad Priel - Recipient of Ben-Amitai Prize for excellence in MSc studies, 2006. Thesis subject: *Mechanical failure criteria for brittle elastic materials containing V-notches under mixed mode loading.*
9. Title conferred in Oct, 10 - Ms. Brigit Ben-Ami (Co-supervisor with Dr. Roni Shnek) - Thesis subject: *Failure initiation in 3-D elastic brittle structures.*
10. Title conferred in Oct, 10 - Ms. Shani Weissberg - Thesis subject: *Finite element analysis for a plastic process with large strains.*
11. Title conferred - Mar, 11, Mr. David Tal - Thesis subject: *Yield laws for the human femur.*
12. Title conferred - Aug, 11, Mr. Alon Katz - Recipient of an award for fourth year project, 2011. Thesis subject: *The mechanical response of femurs fixed by metal devices.*
13. Title conferred - Oct, 13, Mrs. Romina Plitman Mayo - Thesis subject: *Predicting the mechanical response of human femurs with metastatic tumors using patient-specific p-FEMs.*
14. Title conferred - Jan, 15, Mr. Natan Levin - Thesis subject: *On hole-bone failure laws for human femurs.*
15. Title conferred - Jan, 15, Ms. Hadar Frenkel (Co-supervisor with Prof. Jacob Bortman)- Thesis subject: *Towards implementation of a structural constitutive law in a FE model of the heart.*
16. Title conferred - Jan, 15, Mr. Itay Manor - Thesis subject: *Experiments to determine the mechanical properties of arteries.*
17. Title conferred - May, 15, Mr. Yosi Levi - Thesis subject: *Development of a parallel Java based high order finite elements code.*

18. Title conferred - May, 17 - Mrs. Sigal David (Co-supervisor with Prof. Jacob Bortman)- Thesis subject: *Failure Criteria of Pultruded Composites - Analytical and Numerical Study.*
19. Title conferred - May, 17 Mr. Snir Lugassi (Co-supervisor with Prof. Jacob Bortman)- Thesis subject: *Failure Criteria of Carbon Fiber Pultruded Composite - An Experimental Study.*
20. Title conferred - May, 17 - Mr. Ofry Yosef (Co-supervisor with Prof. Gideon Sahar)- Thesis subject: *Experimental investigation of arteries' mechanical properties: Compressibility, passive and active responses.*
21. Title conferred - May, 2018 - Mr. Itay Yacobi - Thesis subject: *High order hierarchical tetrahedral finite elements.*
22. Title conferred - Apr, 2020 - Mr. Or Shaviv - Thesis subject: *Insights on Micromechanical Models of Active Response of Arteries .*

G. SCIENTIFIC PUBLICATIONS

G.1) Books

1. Z. Yosibash, *Singularities in Elliptic Boundary Value Problems and Elasticity and their Connection with Failure Initiation*, Springer, ISBN 978-1-4614-1507-7, Interdisciplinary Applied Mathematics Series, Vol. 37, 2012.

G.2) Original Articles. * - Denotes a supervised MSc/PhD student

1. **Yosibash Z.**, "Structural Risk Assessment in the Israel Air Force for Fleet Management", *AIAA J. of Aircraft*, **29**, No. 4, (1992), pp. 540-544.
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G.3) Accepted Articles

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G.4) Chapters in Books

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G.5) Editing

1. Guest Editor with M. Suri - *International Journal for Numerical Methods in Engineering*, - Special issue dedicated to p-FEM2000, **53**, No. 1, (2002).
2. Guest Editor with M. Suri - *Computers and Mathematics with Applications*, - Special issue - p-FEM2000: p and hp finite element methods-mathematics and engineering practice, **46**, No. 1, (2003).
3. Guest Editor with E. Rank and A. Düster - *Computer Methods in Applied Mechanics and Engineering*, - Special issue dedicated to HOFEM07 - International Workshop on High-Order Finite Element Methods, 2007, **198**, Issues 13-14, 1 (March 2009).
4. Guest Editor with A. Düster, A. Reali and S. Kollmannsberger - *Computers and Mathematics with Applications*, - Special issue dedicated to HOFEIM 2014 - International Workshop on High-Order Finite Elements and Isogeometric Methods, 2014, **70**, Issue 7, (October 2015).
5. Guest Editor with E. Rank, A. Düster and A. Reali - *Computers and Mathematics with Applications*, - Special issue dedicated to HOFEIM 2016 - International Workshop on High-Order Finite Elements and Isogeometric Methods, 2016, **74**, Issue 7, (October 2017).

G.6) Patents

1. US9937011B2 - **Yosibash Z.**, Trabelsi N., Myers K. and Milgrom C., “Automated patient-specific method for biomechanical analysis of bone”, Applied Oct, 7, 2014, Granted Apr, 10, 2018

H. SCIENTIFIC COMMITTEES, EDITORIAL BOARDS, PROFESSIONAL FUNCTIONS

H.1) Participation in scientific committees

2000 International conference: p and hp Finite Element Methods - Mathematics and Engineering Practice, St. Louis, USA, May 2000.

2001 Com² Conference on Computational Mathematics, 2-5, July 2001, POSTECH, Pohang, S. Korea.

2006 International Workshop Research in Mechanics of Composites 2006 26 - 29, Nov. 2006, Bad Herrenalb, Germany

2007 International conference: High Order Finite Element Methods near Munich, Germany, May 2007.

2009 IV International Conference on Computational Bioengineering, Bertinoro, Italy, Sep 2009.

2011 International conference: Higher Order Finite Element and Isogeometric Methods Krakow, Poland, June 2011.

2011 Coupled Problems 2011: IV International conference on computational methods for coupled problems in science and engineering, Kos Island, Greece, 20-22, June 2011.

2012 18th Congress of the European Society of Biomechanics (ESB2012), Lisbon, Portugal, 1-4 July 2012.

2013 Coupled Problems 2013: V Conference on computational methods for coupled problems in science and engineering, Ibiza, Spain, 17-19, June 2013.

2013 Journees Singulieres Augmentees, Rennes, France, 26-30, Aug. 2013.

2013 ICAF 2013, Jerusalem, Israel, 3-4, June 2013.

2014 International conference: Higher Order Finite Element and Isogeometric Methods Germany, July 2014.

2015 Coupled Problems 2015: VI International Conference on Computational Methods for Coupled Problems in Science and Engineering, Island of San Servolo, Venice, Italy, 18 - 20 May 2015.

2015 VI International Conference on Computational Bioengineering (ICCB'2015) ICNME, Barcelona, Spain, 14-16 September 2015.

2016 International conference: Higher Order Finite Element and Isogeometric Methods Jerusalem, Israel, May, 2016.

2016 Eight Singular Days, Nancy, France, 27-30, June 2016.

2016 XIII International Congress on Numerical Methods in Engineering and Applied Sciences (Ciménics), Caracas, Venezuela, 11-13, July 2016.

2017 Coupled Problems 2017: VII International Conference on Computational Methods for Coupled Problems in Science and Engineering, Rhodes Island, 12 - 14 June 2017.

2018 12th World Congress on Computational Mechanics and 2nd Pan American Congress on Computational Mechanics (WCCM XIII & PANACM II), New-York, NY, USA, 22 - 27 July 2018.

2018 9th International Conference on Computational Methods (ICCM2018), Rome, Italy, August 6 -10, 2018.

2019 International conference: Higher Order Finite Element and Isogeometric Methods Pavia, Italy, May 2019.

2019 Coupled Problems 2019: VIII International Conference on Computational Methods for Coupled Problems in Science and Engineering, Sitges, Spain, 3-5 June 2019.

2019 ESBiomech Conference 2019, Vienna, Austria, 7-10 July 2019.

2020 ECF23, European Conference on Fracture, Funchal, Madeira, Portugal, June 27 - July 3, 2020.

2020 ESBiomech Conference 2020, Milano, Italy, 12-15 July 2020.

2021 ICF15 - 15th International Conference on Fracture, Atlanta, Georgia, USA, June 13-18, 2021.

2021 Coupled Problems 2021: IX International Conference on Computational Methods for Coupled Problems in Science and Engineering, Chia Laguna, Sardinia, Italy, June 13-16, 2021.

2021 16th US National Congress on Computational Mechanics (USNCCM-16), Chicago, USA, July 25-29, 2021

H.2) Editorial boards, Professional functions

Dec. 95 - Present	Council Member of the Israel Association for Computational Methods in Mechanics.
Oct. 96 - 2000	Initiator and editor of the IACMM bulletin.
Jan. 00 - May 02	Secretary & Treasurer of the Israel Association for Computational Methods in Mechanics.
Mar. 06 - Present	Member of advisory board - Bavarian (Germany) graduate school of computational engineering.
Dec. 10 - July 14	Member of IUTAM's General Assembly
Jan. 11 - Jan 16	Editor of the IACMM bulletin.
Jan. 12 - Present	Member of the editorial board of <i>Computers & Mathematics with Applications</i>
Jan. 14 - Present	Member of the editorial board of <i>Biomaterials and Biomechanics in Bioengineering</i> (During 2014-2015 it was named <i>Advances in Biomechanics and Applications</i>)
July 15 - Present	President - Israel Association for Computational Methods in Mechanics
Nov 16 - Present	Founder and Co-Chair (with D. Leguillon) - of the Technical Committee #16: on Finite Fracture Mechanics at the European Structural Integrity Society.

H.3) Organization and chairman of international conferences

- May 2000 Chairman (with M. Suri) and Organizer of the *International conference: p and hp Finite Element Methods - Mathematics and Engineering Practice* in St. Louis, USA, May 2000. Hosting over 100 international participants with 80 talks.
- May 2007 Chairman (with E. Rank and A. Duester) and Organizer of the *International conference: High Order Finite Element Methods* Herrsching, Germany, May 17-19, 2007. Over 80 international participants.
- Jan. 2008 Organization committee member of *18th International Conference on Domain Decomposition Methods* Jerusalem, Israel, 13-18 Jan 2008. Hosting about 100 international participants.
- Nov. 2010 Organizer with E. Rank of the international workshop *Bone simulations, experimentation and their applications in clinical practice* at the TUM-Institute for Advanced Study, Nov 3-4, 2010, Garching, Germany
- July 2014 Chairman (with A. Reali, A. Duester and S. Kollmannsberger) and Organizer of the *International conference: High Order Finite Element and Isogeometric Methods* Germany, July 15-18, 2014. Over 80 international participants.
- May 2016 Chairman (with A. Reali, A. Duester and S. Kollmannsberger) and Organizer of the *International conference: High Order Finite Element and Isogeometric Methods* Jerusalem, Israel, May 30- June 2, 2016. Over 55 international participants.
- April 2018 Chairman and Organizer of the international workshop *First workshop on TC16 - finite fracture mechanics* La Thuile, Italy, April 13-14, 2018. 11 international participants from 5 different countries.
- March 2019 Chairman with Leguillon of the international workshop *Second workshop on TC16 - finite fracture mechanics* Grenoble, France, March 28-29, 2019. 20 international participants from 6 different countries.
- May 2019 Chairman (with A. Reali, E. Rank, A. Duester and G. Sangalli) of the *International conference: High Order Finite Element and Isogeometric Methods* Pavia, Italy, May 28-31, 2019. Over 80 international participants.

I. EDUCATIONAL AND ADMINISTRATIVE ACTIVITIES

I.1) Courses taught

<i>Fracture mechanics</i> 362-26781	Grad	ME Dept, BGU	SP05, SP06, SP08 SP13
<i>Singularities in elliptic problems & their treatment by high-order FEM</i> AM282(S3)	Grad	Applied Math, Brown Univ, USA	SP03
<i>Mechanics of non-elastic bodies</i> 362-26081	Grad	ME Dept, BGU	SP01, FL06, SP10 FL11, FL13
<i>Elasticity 1</i> 362-26061	Grad	ME Dept, BGU	FL00, FL01, FL04
<i>Elasticity 2</i> 362-26131	Grad	ME Dept, BGU	SP11
<i>Numerical analysis</i> SSM 511	Grad	System Sci & Math Washington Univ, USA	FL94, SU95
<i>Advanced methods in finite element analysis</i> 362-26491	Grad	ME Dept, BGU	SP97, SP99, FL00 SP02, FL03, FL05 SP09, SP11, FL14 SP17
<i>Plasticity</i> 0540-6406-01	Grad	School of ME, TAU	SP18
<i>Biomechanics of bones & arteries</i> 0540-6445	Grad	School of ME, TAU	FL18
<i>Biomechanics of bones & arteries</i> 362-14922	Undergrad	ME Dept, BGU	SP15, SP16, SP17
<i>Strength of materials 1</i> 362-12111	Undergrad	ME Dept, BGU	SP04, FL04, FL05, FL06, FL07, FL08
<i>Intro to elasticity</i> 362-13111	Undergrad	ME Dept, BGU	FL98, FL03, SP07, FL07, FL08, FL11 FL12, FL13, FL15 SP17
<i>Numerical methods for engineers</i> 362-13341	Undergrad	ME Dept, BGU	SP98, SP00, FL00, FL01 SP14
<i>Statics</i> 362-11061	Undergrad	ME Dept, BGU	SU97
<i>UNIX system administration</i>	Undergrad	Sapir College	SP00, SP01, SP02
<i>Programming (Fortran 90), (C)</i> 201-19061	Undergrad	Sapir College	FL96, FL97, SP99, FL00, FL01
<i>Intro to finite element analysis</i> 362-13091	Undergrad	ME Dept, BGU	FL96, SP96, FL97, FL98, SP99, SP00, SP01, SP02, SP04, SP05, SP06, SP07, SP08, SP09, SP10, SP12 SP13, SP14, FL14, FL15 FL16
<i>Intro to finite elements</i> 0542-4223	Undergrad	School of ME, TAU	FL18

I.2) Positions at TAU academic administration

March 2018 - Sep 2018: PhD students committee at the Faculty of Engineering.

Oct. 2018 - Present: Chairman - PhD students committee at the Faculty of Engineering.

June 2019: Search committee for the head of School of Mechanical Engineering.

I.3) Positions at BGU academic administration

1995 - 1996: Dept. graduate students committee.

1995 - 1997: Chairman - Dept. computational committee.

1996 - 1997: Dept. seminars committee.

1996 - 1998: Univ. BGU Representative at IDF - committee on "Atudaim".

1997 - 1999: Dept. marketing committee.

1997 - 2000: Dept. computational committee.

2000 - 2002: Elected to the steering committee - Pearlstone Center.

2000 - 2002: Chairman - Dept. curriculum committee.

2000 - 2002: Dept. Teaching committee.

2000 - 2002: Dept. Graduate students committee.

2001 - 2002: Head of Science and Technology Division in Creation of the Israel Flight Academy -
Syllabi, lecturers employment and coordinator.

2003 - 2004: Chairman - Dept. Graduate Studies Committee.

2005 - 2009: BGU committee on Hi-Learn.

2007 - 2011: BGU committee for PhD studies.

2008 - 2010: Elected to BGU senate substitute in the committee for medical faculty promotion.

2008 - 2013: Elected to BGU senate.

2009 - 2011: Chairman - Dean's Podium Committee.

2011 - 2013: Elected to Vaada Merakezet (11 members - Rector, Deans, one representative from
each Faculty).

2011 - 2013: Chairman of Talpiot committee at the Faculty of Engineering.

2011 - 2013: Graduate students committee at the Faculty of Engineering.

J) REVIEWING

J.1) Grant Proposals

Natural Sciences and Engineering Research Council of Canada. ETH Zurich Research Commission. Fellowship, Institute for Advanced Study, Technical Univ of Munich, Germany. Paracelsus Medical University Research Fund, Salzburg, Austria. German-Israel Foundation (GIF). Research Promotion Foundation - Cyprus. International Graduate School of Science and Engineering (IGSSE) - Technical Univ. of Munich, Germany. Israel Defence Force - Health Division. Israel Ministry of Health. FWF - Austrian Science Foundation. Israel Ministry of Science and Technology. Israel-USA Binational Science Foundation (BSF). Israel Science Foundation (ISF).

J.2) Books

Reviewer for Wiley and Sons.

J.3) International journals/Book chapters

Advances in Biomechanics & Applications, An International Journal, Annals of Biomedical Engineering, ASME - Journal of Biomechanical Engineering, Biomechanics and Modeling in Mechanobiology, Biomedical Engineering/Biomedizinische Technik, Bone, Clinical Biomechanics, Computer Methods and Programs in Biomedicine, International Journal for Computational Methods in Engineering Science & Mechanics, International Journal for Computer-Aided Engineering and Software, International Journal for Numerical Methods in Biomedical Engineering, Journal of Biomechanics, Journal of the Mechanical Behavior of Biomedical Materials, Medical & Biological Engineering & Computing, Medical Engineering and Physics, Philosophical Transactions of the Royal Society - A, UNESCO encyclopedia & EOLSS - on biomechanics.

Advances in Computational Mathematics, Applied Mechanics Reviews, Applied Numerical Mathematics, Composite Science and Technology, Computers and Mathematics with Applications, Computer Methods in Applied Mechanics and Engineering, Engineering Fracture Mechanics, European Journal of Mechanics - A/Solids, Fatigue and Fracture of Engineering Materials and Structures, International Journal for Numerical Methods in Engineering, International Journal of Fracture, International Journal of Solids and Structures, Journal of Computational Physics, Journal of Engineering Mechanics, Mathematical Reviews, Mechanics of Advanced Materials and Structures, Mechanics of Materials, Mechanics of Materials and Structures, Numerical Methods for Partial Differential Equations, SIAM Journal on Scientific Computing, Theoretical & Applied Fracture Mechanics, ZAMM - Journal of Applied Mathematics and Mechanics / Zeitschrift für Angewandte Mathematik und Mechanik.