RESUME

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Gal Shmuel

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Academic Degrees

Ben-Gurion University — *Beer-Sheva, Israel*
PhD. Mechanical Engineering — *2009 - 2012*
Supervisor: Prof. Gal deBotton

Ben-Gurion University — *Beer-Sheva, Israel*
M.Sc. Mechanical Engineering, Magna cum Laude — *2007 - 2009*
Supervisor: Prof. Gal deBotton
Excellence program in which undergraduate students start their M.Sc. degree in their senior year

Ben-Gurion University — *Beer-Sheva, Israel*
B.Sc. Mechanical Engineering, Summa Cum Laude — *2004 - 2008*

Academic Appointments

Technion - Israel Institute of Technology, Faculty of Mechanical Engineering — *Haifa, Israel*
Associate Professor (with Tenure) — *Oct. 2019 - present*

Technion - Israel Institute of Technology, Faculty of Mechanical Engineering — *Haifa, Israel*
Assistant Professor — *Sept. 2014 - Sept. 2019*

Division of Engineering and Applied Science, Caltech - California institute of Technology — *Pasadena, CA, USA*
Supervisor: Prof. K. Bhattacharya
Post-doctoral fellow — *Oct. 2012 - Sept. 2014*

Department of Mechanical and Structural Engineering, University of Trento — *Trento, Italy*
Visiting scientist — *Mar. 2010 - Sept. 2010*

Professional Experience

SigNexT Wireless Ltd.
External consultant — *2009*
kinematic analysis of adjustable antennas

Research Interests

Non-Hermitian elastodynamics; metamaterials and homogenization of composites; dielectric elastomers; finite deformations

Teaching

Design of new courses

036097 **Dynamics and homogenization of composites and metamaterials ,** Graduate — *Technion*

Instructor in other courses

034010	**Dynamics,** Undergraduate	*Technion*
035043	**Introduction to the theory of elasticity,** Undergraduate	*Technion*
036003	**Introduction to continuum mechanics,** Graduate	*Technion*

Technion, Departmental and Other Activities

2023-	**Seminars' coordinator,** Mechanical Engineering, Technion
2022	**Vice dean for teaching affairs,** Mechanical Engineering, Technion
2016-22	**Head of the Material Mechanics and MEMS Program,** Faculty of Mechanical Engineering, Technion

Academic Professional Activities

2022-	**Associate editor,** Wave Motion	
Date withheld	**Member,** ISF grant committee	*Israel*
Date withheld	**Member,** BSF grant committee for travel grant	*Israel*
Date withheld	**Member,** PAZI grant committee	*Israel*
Date withheld	**Referee,** ISF	
2013-	**Referee,** Journal of the Mechanics and Physics of Solids; Mechanics of Materials, Mathematics and Mechanics of Solids; International Journal of Solids and Structures; Nonlinear Dynamics; Wave motion; Journal of Applied Physics; The Journal of the Acoustical Society of America; Mechanics Research Communications; Extreme Mechanics Letters; Quarterly Journal of Mechanics and Applied Mathematics; Mechanical Systems and Signal Processing; Nature Communications; International Journal of Non-linear Mechanics; International Journal of Engineering Science; Physical Review Applied; Physical Review E; Physical Review Letters; Journal of applied Mechanics; Philosophical Transaction of the Royal Society A	
2015-	**PhD/MSc theses committees,** Faculties of Mechanical Engineering (4) and Chemical Engineering (1), Technion; department of Mechanical Engineering, Ben Gurion University (5); School of Mathematics, Statistics and Applied Mathematics, NUI Galway, Ireland (1)	

Fellowships, Awards and Honors

2016	**Citation for excellence in teaching (top 12% of Technion),**	*Technion*
2012	**Outstanding oral presentation by a PhD student,** 32nd Israeli Mechanical Engineering Conference	
2012	**"Ehud Ben-Amitay" prize,** For aerospace related graduate research	*Ben-Gurion University*
2010	**European Erasmus Mundus fellowship,** For excellent PhD students	
2010	**The Paran fellowship from the Negev scholarship,** For outstanding PhD students	*Ben-Gurion University*

Student Supervision

Completed MSc theses [9]

2023 **K. Muhafra,** Discrete One-dimensional Models for the Electromomentum Coupling *J34*
”Reamim” excellence program

2023 **T. Goldstein,** Scattering properties of non-Hermitian elastic media *J33*

2023 **G. Elbaz,** Encirclement of Exceptional Points in Passive Elastic Laminates *J22, J31, S1*
Summa cum laude
“Reamim” excellence program
Gutwirh scholarship fellow
The Eli Altus excellence prize recipient

2023 **A. Muhafra,** The Electro-Momentum Coupling in Piezoelectric Metamaterials *J22,J29,J33*
Summa cum laude
“Reamim” excellence program
Sherman scholarship fellow
The Sandy and Beatrice Wahlberg excellence prize recipient

2022 **M. Kosta,** Applications of topology optimization in electroelastodynamics *J29, J30, J32*
Primary supervisor: Assoc. Prof. Oded Amir (Technion)

2020 **R. Ziv,** Non-linear Wave Propagation in Soft Materials *J20, J25, 26*
Summa cum Laude
”Brakim” excellence program
The Miles Rubin prize recipient

2020 **B. Lustig,** Metamaterial Wave Phenomena in Laminates *J18, J22*
Summa cum Laude
”Brakim”excellence program
The Yehuda Moneheit excellence award recipient
The Miles Rubin excellence award recipient

2018 **Y. Ziser,** Experimental Slowing of Flexural Waves in Dielectric Elastomer film by voltage *J15*

2017 **R. Getz,** Tunable Band-Gaps In Soft Electroactive Composites *J12, J14*
Summa cum Laude
”Brakim” excellence program
Sandy and Beatrice Wahlberg excellence prize recipient

PhD theses in progress [3]

2023-27 **P. Sharma,** Non-Hermitian elastodynamics

2021-25 **A. P. Singh,** Generalized Willis Materials: Finite Element Modeling
Primary supervisor: Asst. Prof. Atul Kumar Sharma (IIT Jodhpur)

2018-24 **E. Ben-Haim,** Leveraging Bi-Stability for Minimalistic Control of Fluid Based Soft Actuators: Theoretical and Experimental Investigation *J34*
Primary supervisor: Assoc. Prof. Amir Gat (Technion)

MSc theses in progress [1]

2021-24 **A. Fishman,** Waves in anisotropic layered media *S1*

SPONSORED LONG-TERM VISITORS AND POST-DOCTORAL ASSOCIATES

Former post-docs [4]

2017-21 **Dr. R. Pernas-Salomón,** *J11, J19, J23, J27, J28, J29, J32*
Technion scholarship fellow
Currently: CONEX-Plus fellow at Universidad Carlos III de Madrid

2020-21 **Dr. P. Kumar,**
Main supervisor: Assoc. Prof. O. Amir (Technion)
Currently: Asst. Prof. at the Indian Institute of Technology Hyderabad

2019-20 **Dr. A. Sharma,** *J30*
Currently: Asst. Prof. at the Indian Institute of Technology Jodhpur

2016-17 **Dr. E. Bortot,** *J13, J16, J17*
Lady Davies scholarship fellow
Currently: Research associate, Fraunhofer Italia

Current post-docs [2]

2023- **Dr. M. Hedge,**

2023- **Dr. V. Varma,** *S1*

Research Grants

Total grant funds: $2.485M

2022-27 **European Research Council consolidators (ERC CoG),** EXCEPTIONAL: non-Hermitian Elastodynamics, PI , $1.76M (1.6M Euro)

2020-24 **Israel Science Foundation (ISF),** Electro-momentum coupling in piezoelectric composites, PI, $280k

2019-2022 **Ministry of Science and Technology (MOST),** Topology Optimization of Soft Dielectrics for Dynamic Metamaterials, PI, co-PI: Assoc. Prof. O. Amir (Technion), $134k

2015-2019 **Bi-national Science Foundation (BSF),** Tunable Stop-Bands in Soft Electroactive Composites, PI, co-PI: Prof. D. Kochmann (ETH), $108k

2015-19 **Israel Science Foundation (ISF),** Wave Localization in Disordered Dielectric Elastomers, PI, $203k

Publications

Theses:

[T1] **Shmuel, G.** *Anisotropic composites in finite elasticity,* MSc at Mechanical Engineering, Ben-Gurion University

[T2] **Shmuel, G.** *Wave propagation in multi-phase finitely deformed dielectric elastomers,* PhD at Mechanical Engineering, Ben-Gurion University

Refereed papers in professional journals:

[J1] deBotton, G., **Shmuel, G.**, *Mechanics of composites with two families of finitely extensible fibers undergoing large deformations,* J. Mech. Phys. Solids, 57:1165-1181, 2009 (17 pages)

[J2] deBotton, G., **Shmuel, G.**, *A new variational estimate for the effective response of hyperelastic composites,* J. Mech. Phys. Solids, 58:466-483, 2010 (18 pages)

[J3] **Shmuel, G.**, deBotton, G., *Out-of-plane shear of fiber composites at moderate stretch level,* J. Eng. Math., special issue: mechanics of fibre-reinforced materials: theory and applications 68:85-97, 2010 (13 pages)

[J4] **Shmuel, G.**, Gei, M., deBotton, G., *The Rayleigh-Lamb wave propagation in dielectric elastomer layers subjected to large deformations,* Int. J. Nonlinear Mech., special issue dedicated to R. W. Ogden, 47:307-316, 2012 (10 pages)

[J5] **Shmuel, G.**, deBotton, G., *Band-gaps in electrostatically controlled dielectric laminates subjected to incremental shear motions,* J. Mech. Phys. Solids, 60:1970-1981, 2012 (12 pages)

[J6] **Shmuel, G.**, deBotton, G., *Axisymmetric wave propagation in finitely deformed dielectric elastomer tubes,* Proc. R. Soc. A, 469, 2013 (16 pages)

[J7] **Shmuel, G.**, *Electrostatically tunable band gaps in finitely extensible dielectric elastomer fiber composites* Int. J. Solids Struct., 50:680-686,2013 (7 pages)

[J8] **Shmuel, G.**, Thorgeirsson, A. T., Bhattacharya, K. *Wavelets analysis of microscale strains*, Acta Mater.,76:118-126, 2014 (9 pages)

Henceforth appear my publications as PI at Technion. My graduate students and postdocs are underlined.

[J9] **Shmuel, G.**, *Manipulating torsional motions of soft dielectric tubes,* J. Appl. Phys., 117, 174902, 2015 (8 pages)

[J10] **Shmuel, G.**, Band, R., *Universality of the frequency spectrum of laminates*, J. Mech. Phys. Solids, 92:127-136, 2016 (10 pages)

[J11] **Shmuel, G.**, Pernas-Salomón, R., *Manipulating motions of elastomer films by electrostatically-controlled aperiodicity*, Smart Mater. Struct., 25(12):125012, 2016 (13 pages)

[J12] Getz, R., Kochmann, D. M., **Shmuel, G.**, *Voltage-controlled complete stopbands in two-dimensional soft dielectrics*, , Int. J. Solids Struct., 113:24–36, 2017 (13 pages)

[J13] Bortot, E., **Shmuel, G.**, *Tuning sound with soft dielectrics*, Smart Mater. Struct. 26:045028, 2017 (10 pages)

[J14] Getz, R., **Shmuel, G.**, *Band gap tunability in deformable dielectric composite plates*, Int. J. Solids Struct., 128:11–22, 2017 (12 pages)

[J15] Zisser, Y., **Shmuel, G.**, *Experimental slowing of flexural waves in dielectric elastomer films by voltage*, Mech. Res. Commun., 85, 64-68, 2017 (5 pages)

[J16] Bortot, E., **Shmuel, G.**, *Prismatic bifurcations of soft dielectric tubes*, Int. J. Eng. Sci., 124:104-114, 2018 (11 pages)

[J17] Bortot, E., Amir, O., **Shmuel, G.**, *Topology optimization of dielectric elastomers for wide tunable band gaps*, Int. J. Solids Struct., 143:262-273, 2018 (12 pages)

[J18] Lustig, B., **Shmuel, G.**, *On the band gap universality of multiphase laminates and its applications*, J. Mech. Phys. Solids, 117:37-53, 2018 (17 pages)

[J19] Pernas-Salomón, R., **Shmuel, G.**, *Dynamic homogenization of composite and locally resonant flexural systems,*, J. Mech. Phys. Solids, 119:43-59, 2018 (17 pages)

[J20] Ziv, R., **Shmuel, G.**, *Smooth waves and shocks of finite amplitude in soft materials*, Mech. Mat., 135:67-76, 2019 (10 pages)

[J21] Morini, L., Tetik, Z. G., **Shmuel, G.**, Gei, M., *On the universality of the frequency spectrum and band-gap optimization of quasicrystalline-generated structured rods*, Philos. Trans. R.Z Soc.ZA, 378, 2020 (22 pages)

[J22] Lustig, B., Elbaz, G., Muhafra, E., **Shmuel, G.**, *Anomalous energy transport in laminates with exceptional points*, J. Mech. Phys. Solids 103, 103719, 2019 (18 pages)

[J23] Pernas-Salomón, R., **Shmuel, G.**, *Symmetry breaking creates electro-momentum coupling in piezoelectric metamaterials*, J. Mech. Phys. Solids, 103770, 2020 (17 pages)

[J24] **Shmuel, G.**, Moiseyev, N., *Linking scalar elastodynamics and Non-Hermitian quantum mechanics*, Phys. Rev. Applied, 13, 024074, 2020 (11 pages)

[J25] Ziv, R., **Shmuel, G.**, *Observation of vector solitary waves in soft laminates using a finite volume-method*, Int. J. Nonlinear Mech., 124, 103502, 2020 (10 pages)

[J26] Ziv, R., **Shmuel, G.**, *Oscillating vector solitary waves in soft laminates*, J. Mech. Phys. Solids, 143, 104058, 2020 (14 pages)

[J27] Pernas-Salomón, R., **Shmuel, G.**, *Fundamental principles for generalized Willis metamaterials*, Phys. Rev. Applied, 14 (6), 064005, 2020 (19 pages)

[J28] Pernas-Salomón, R., Haberman, R. M., Norris, N. A, **Shmuel, G.**, *The electromomentum effect in piezoelectric Willis scatterers*, Wave Motion, 106, 102797, 2021, Invited paper for the special issue on Willis Materials (23 pages)

[J29] Muhafra, A., Kosta, M., Torrent, D., Pernas-Salomón, R., **Shmuel, G.**, *Homogenization of piezoelectric planar Willis materials undergoing antiplane shear*, Wave Motion, 108, 102833, 2022, Invited paper for the special issue on Willis Materials (19 pages)

[J30] Sharma, A. K, Kosta, M.,, **Shmuel, G.**, Amir, O., *Gradient-based topology optimization of dielectric elastomers as tunable phononic crystals*, Compos. Struct., 280, 114846, 2022 (17 pages)

[J31] Elbaz, G., Pick, A., Moiseyev, N., **Shmuel, G.**, *Encircling exceptional points of Bloch waves: mode conversion and anomalous scattering*, J. Phys. D: Appl. Phys., 55 235301, 2022 (15 pages)

[J32] Kosta, M., Muhafra, A., Pernas-Salomón, R., **Shmuel, G.**, Amir, O., *Maximizing the electromomentum coupling in piezoelectric laminates*, Int. J. Solids Struct., 254-255, 111909 2022 (13 pages)

[J33] Goldstein, T., **Shmuel, G.**, *Oblique scattering from non-Hermitian optical waveguides*, Phys. Rev. A, 107, 023503 (10 pages)

[J34] Ben-Haim, E., Or, I., Gat, A. D., **Shmuel, G.** *Non-spherical deformations of hyperelastic shells*, Int. J. Solids Struct., 282, 112448, 2023 (12 pages)

[J35] Muhafra, K., Haberman, R. M., **Shmuel, G.**, *Discrete One-dimensional Models for the Electromomentum Coupling*, Phys. Rev. Applied, 20, 014042, 2023 (14 pages)

Submitted papers:

[S1] Fishman, A., Elbaz, G., Varma, T. V., **Shmuel, G.**, *Third-Order Exceptional Points and Frozen Modes in planar Elastic Laminates*, under review in J. Mech. Phys. Solids

Conferences

Plenary, keynote or invited talks:

[I1] Shmuel, G., deBotton, *On the propagation and manipulation of waves in soft electroactive tubes*, SES 50th Annual Technical Meeting and ASME-AMD Annual Summer Meeting (SES/ASME-AMD 2013), in the session "Mechanics of Phase Transforming and Multifunctional Materials", Brown University, Providence, USA, 2013, **keynote lecture**.

[I2] Shmuel, G., *A New Variational Method for Bounding the Effective Behavior of Soft Composites*, Mathematics of novel materials, Mittag-Leffler Institute, Stockholm, Sweden, 2015, **invited (and funded) lecture**.

[I3] Shmuel, G., Lustig, B., *On the Band Gap Universality of Multiphase Laminates and its Applications*, 18th U.S. National Congress for Theoretical and Applied Mechanics, in the symposium "Phononics and Metamaterials", Chicago, Illinois, USA, 2018, **keynote lecture**.

[I4] Shmuel, G., *Stimulus-Momentum Coupling in Active Metamaterials with Broken Symmetry*, RAM3-Recent Advances in Mechanics and Mathematics of Materials, Rome, Italy, 2019, **invited (and funded) lecture**.

[I5] Shmuel, G., Lustig, B., Elbaz, G., Muhafra, A., *Anomalous energy flow in passive elastic layers with exceptional points*, XIV workshop on physics of condensed and molecular matter, Cuernavaca Morelos, Mexico, 2020 (virtual), **invited lecture**.

[I6] Shmuel, G., Pernas-Salomón, R., Muhafra, A., Kosta, M., Haberman, Torrent, D., R. M., Norris, N. A, *The electromomentum coupling in generalized piezoelectric media*, SIAM Conference on Mathematical Aspects of Materials Science, 2021, **invited lecture (virtual)**.

[I7] Shmuel, G., Pernas-Salomón, R., Muhafra, A., Kosta, M., Haberman, Torrent, D.,R. M., Norris, N. A, *The electromomentum coupling in generalized piezoelectric media*, The Acoustical Society of America's spring meeting "Acoustics in Focus", **invited lecture (virtual)**.

[I8] Shmuel, G., *Non-Hermitian elastodynamics without gain and loss*, The Acoustical Society of America's spring meeting "Acoustics in Focus", **invited lecture (virtual)**.

[I9] Shmuel, G., Pernas-Salomón, R., Muhafra, A., Kosta, M., Haberman, Torrent, D., R. M., Norris, N. A, *The electromomentum coupling in generalized piezoelectric media*, *The International Conference on Recent Advances in Mechanical Engineering 2022*, Jodhpur, India, **keynote lecture (virtual)**.

Contributed talks:

[C1] Shmuel, G., deBotton, G., *Homogenization of nonlinear fiber-reinforced composites in finite deformations*, Modeling and Computation in Biomechanics (workshop), Graz University of Technology, Austria, 2008.

[C2] deBotton, G., Shmuel, G., *Nonlinear composites with one and two families of fibers*, The 45th Annual Technical Meeting of the Society of Engineering Science (SES08), University of Illinois at Urbana-Champaign, USA, 2008.

[C3] deBotton, G., Shmuel, G., Rudykh, S., *Fiber composites in finite elasticity*, The 4th International Symposium on Defect and Material Mechanics (ISDMM09), University of Trento, Trento, Italy, 2009.

[C4] deBotton, G., Shmuel, G., *Hyperelastic fiber composites - homogenization and application to biological tissues*, International workshop on Continuum Biomechanics of Biological Tissue, Castro Urdiales, Spain, 2009.

[C5] Shmuel, G., deBotton, G., *Mechanics of composites with two families of finitely extensible fibers undergoing large deformations*, The 2009 Joint ASCE-ASME-SES Conference on Mechanics and Materials, Virginia, USA, 2009.

[C6] deBotton, G., Shmuel, G., *A new variational procedure for estimating the macroscopic behavior of soft collagenous tissues*, The 16th US National Congress on Theoretical and Applied Mechanics (USNCTAM), State College, PA, USA, 2010.

[C7] deBotton, G., Shmuel, G., Oren, T., *A new variational procedure for estimating the behaviors of soft composites*, SES 2010 conference, Iowa State University, USA, 2010.

[C8] deBotton, G., Shmuel, G., Oren, T., Goldenberg, Y., *Soft composites attaining the Hashin-Shtrikman bounds at the referential state*, ISTAM Symposium 25, Tel Aviv University, Israel, 2011.

[C9] Shmuel, G., Gei, M., deBotton, G., *Generalized Rayleigh-Lamb wave propagation in finitely deformed dielectric elastomers*, EuroEAP 2011 First International conference on Electromechanically Active Polymer (EAP) transducers and artificial muscles, Pisa, Italy, 2011 (oral and poster presentation, in conference proceeding).

[C10] Shmuel, G., deBotton, G., *Adjustable band-gaps in dielectric elastomer laminates subjected to finite strains*, EuroEAP 2011 First International conference on Electromechanically Active Polymer (EAP) transducers and artificial muscles, Pisa, Italy, 2011 (oral and poster presentation, in conference proceeding).

[C11] Shmuel, G., Gei, M., deBotton, G., *Finitely strained dielectric elastomer layers as waveguides for electroelastic waves*, 48th Annual Technical Conference of Society of Engineering Sciences (SES11), Northwestern University Evanston, Illinois, USA, 2011.

[C12] Shmuel, G., deBotton, G., *Tunable band-gaps in finitely deformed periodic laminates composed of dielectric elastomers*, 48th Annual Technical Conference of Society of Engineering Sciences (SES11), Northwestern University Evanston, Illinois, USA, 2011.

[C13] Shmuel, G., *Electrostatically controlled band-gaps in fiber-reinforced dielectric elastomers*, EuroEAP 2012, Second International conference on Electromechanically Active Polymer (EAP) transducers and artificial muscles, Potsdam, Germany, 2012 (oral and poster presentation, in conference proceeding).

[C14] deBotton, G., Shmuel, G., Oren, T., *A micromechanics approach for estimating the behavior of soft collagenous tissues*, The 8th European Solid Mechanics Conference (ESMC 2012), Graz, Austria, 2012.

[C15] deBotton, G., Shmuel, G., Rudykh, S., *Electroactive polymer composites - mechanical response, stability, wave propagation and band-gap*, The XXIII ICTAM, Beijing, China, 2012.

[C16] Shmuel, G., deBotton, G., *On the thickness vibrations and stop-bands in actuated dielectric elastomer laminates*, the 32nd Israeli Conference on Mechanical Engineering (ICME 2012), Tel-Aviv, Israel, 2012.

[C17] Shmuel, G., *Electroelastic wave annihilation via actuation of 2D dielectric elastomer composites*, the 32nd Israeli Conference on Mechanical Engineering (ICME 2012), Tel-Aviv, Israel, 2012.

[C18] Shmuel, G., Thorgeirsson, A., Bhattacharya, K., *Wavelet analysis for modeling the behavior of polycrystals*, ICMR Summer School on Materials in 3D: Modeling and Imaging at Multiple Length Scales (poster presentation), University of California, Santa Barbara, USA, 2013.

[C19] deBotton, G., Shmuel, G., Rudykh, S., Oren, T., *Hyperelastic fiber composites - homogenization and macroscopic stability*, SES 50th Annual Technical Meeting and ASME-AMD Annual Summer Meeting (SES/ASME-AMD 2013), Brown University, Providence, USA, 2013.

[C20] Shmuel, G., deBotton, G., *On the propagation and manipulation of waves in soft electroactive tubes*, SES 50th Annual Technical Meeting and ASME-AMD Annual Summer Meeting (SES/ASME-AMD 2013), Brown University, Providence, USA, 2013.

[C21] Shmuel, G., Bhattacharya, K., *Adaptive wavelet-based approach for predicting the mechanical behavior of polycrystals*, SES 50th Annual Technical Meeting and ASME-AMD Annual Summer Meeting (SES/ASME-AMD 2013), Brown University, Providence, USA, 2013.

[C22] Shmuel, G., Thorgeirsson, A., Bhattacharya, K., *Applications of wavelets in the representation and prediction of transformation in shape-memory polycrystals*, TMS 2014 143rd annual meeting and exhibition, San Diego Convention Center, San Diego, California, USA, 2014.

[C23] Shmuel, G., Thorgeirsson, A., Bhattacharya, K., *Wavelet analysis of microscale strains*, Continuum Models Discrete Systems (CMDS) 13, University of Utah, USA, 2014.

[C24] Shmuel, G., deBotton, G., *A New Variational Method for Bounding the Effective Behavior of Soft Composites*, Mathematics of Novel Materials, Mittag-Leffler Institute, Stockholm, Sweden, 2015.

[C25] Shmuel, G., Thorgeirsson, A., Bhattacharya, K., *Wavelets in Microstructure Data Reduction, Construction, and Analysis*, CERMODEL 2015, University of Trento, Italy, 2015.

[C26] Shmuel, G., *Electrostatic Tuning of Band-gaps in Fibrous Deformable Dielectrics*, 9th European Solid Mechanics Conference (ESMC Carlos III University, Leganés, Madrid, Spain, 2015).

[C27] Getz, R., Shmuel, G., *Complete band-gaps in soft dielectric fiber-composites*, ISTAM 2015 Annual Symposium, Tel-Aviv University, Tel-Aviv, Israel, 2015.

[C28] Shmuel, G., Band, R., *The Universality of the Band Structure of Layered Composites*, 24th International Congress of Theoretical and Applied Mechanics (ICTAM 2016), Palais des congres, Montréal, Canada, 2016.

[C29] Getz, R., Shmuel, G., *Actuation of soft dielectric films for tunable band-gaps*, ISTAM 2017 Annual Symposium, Tel-Aviv University, Tel-Aviv, Israel, 2017.

[C30] Shmuel, G., Band, R., *Universality of the Frequency Spectrum of Laminates*, ISTAM 2017 Annual Symposium, Tel-Aviv University, Tel-Aviv, Israel, 2017.

[C31] Bortot, E., Shmuel, G., *Manipulating sound propagation with soft dielectric tubes*, ISTAM 2017 Annual Symposium, Tel-Aviv University, Tel-Aviv, Israel, 2017.

[C32] Shmuel, G., Band, R., *Characterizing the tunability of the frequency spectrum of nonlinear laminates through unveiled universality*, International Conference on Plasticity, Damage, and Fracture 2018, San Juan, Puerto Rico, USA, 2018.

[C33] Shmuel, G., Lustig, B., *On the band gap universality of multiphase laminates and its applications*, 18th U.S. National Congress for Theoretical and Applied Mechanics, Chicago, Illinois, USA, 2018.

[C34] Lustig, B., Shmuel, G., *Universality of the frequency spectrum of laminates*, 10th European Solid Mechanics Conference, Bologna, Italy, 2018.

[C35] Pernas-Salómon, R., Shmuel, G., *Dynamic homogenization of composite and locally resonant flexural systems*, SES meeting 2018, Madrid, Spain, 2018.

[C36] Lustig, B., Shmuel, G., *On the band gap universality of multiphase laminates and its applications*, SES meeting 2018, Madrid, Spain, 2018.

[C37] Lustig, B., Shmuel, G., *Characterizing the band-gap tunability of soft multiphase laminates through unveiled universality*, SES meeting 2018, Madrid, Spain, 2018.

[C38] Ziv, R., Shmuel, G., *Smooth waves and shocks of finite amplitude in soft materials*, The multiscale spectrum of constitutive modeling in solid mechanics, Castro Urdiales, Spain, 2019.

[C39] Pernas-Salómon, R., Shmuel, G., *Emergence of new Willis couplings in responsive metamaterials*, The multiscale spectrum of constitutive modeling in solid mechanics, Castro Urdiales, Spain, 2019.

[C40] Shmuel, G., *Symmetry breaking creates electro-momentum coupling in piezoelectric metamaterials*, the 69th Symposium of the Israel Society for Theoretical and Applied Mechanics (ISTAM 2019), Haifa, Israel, 2019.

[C41] Shmuel, G., Lustig, B., Elbaz, G., Muhafra, A., *Anomalous energy flow in passive elastic layers with exceptional points*, Control of Quantum and Classical Waves in Complex Media workshop, Ein Gedi, Israel, 2020.

[C42] Shmuel, G., Pernas-Salomón, R., Muhafra, A., Kosta, M., Haberman, Torrent, D., R. M., Norris, N. A, *The Electromomentum Effect in Piezoelectric Willis Media*, The 19th U.S. National Congress on Theoretical and Applied Mechanics (USNCTAM 2022), Austin, Texas, USA, 2022.

[C43] Shmuel, G., Pernas-Salomón, R., Muhafra, A., Kosta, M., Haberman, Torrent, D., R. M., Norris, N. A, *Trian-isotropy and the Electromomentum Effect*, The 12th International Conference on Elastic, Electrical, Transport, and Optical Properties of Inhomogeneous Media (ETOPIM12), Besancon, France, 2022.

[C44] Muhafra, K., Haberman, R. M., Shmuel, G., *Discrete One-dimensional Models for the Electromomentum Coupling*, Phononics 2023: 6th international conference on phononic crystals/metamaterias/metasurfaces, phonon transport, topological Phononics, Manchester, UK, 2023.

Participation in organizing conferences

2022	**Co-organizer,** Minisymposium "New Metamaterial Concepts", 19th USNC/TAM	*Austin, Texas, USA*
2019	**Co-organizer & co-chairman,** The 69th Symposium of the Israel Society for Theoretical and Applied Mechanics (ISTAM 2019)	*Haifa, Israel*
2018	**Co-organizer & co-chairman,** Phononics and Metamaterials symposium in 18th U.S. National Congress for Theoretical and Applied Mechanics	*Chicago, Illinois, USA*
2015	**Co-organizer,** From nitinol in coffee to now: a twenty-seven year journey of active materials, Symposium in honor of Prof. Kaushik Bhattacharya on the occasion of his 50th birthday	*Pasadena, USA*
2013	**Co-chairman,** Mechanics of phase transforming and multifunctional materials session in SES 50th annual technical meeting and ASME-AMD annual summer meeting (SES/ASME-AMD 2013)	*Providence, USA*