

Gianluca Rizzello

E-Mail: gianluca.rizzello@imsl.uni-saarland.de

Website: <https://www.uni-saarland.de/en/chair/rizzello.html>

RESEARCH INTEREST

Smart Material Systems

Modeling, control, and self-sensing of innovative mechatronic actuator/sensor/generator systems based on smart material transducers (dielectric elastomers, shape memory alloys, piezoelectrics)

Motion Control Systems

Development of motion, force, and interaction control algorithms for innovative mechatronic systems (high-speed electric motors, innovative fluidic actuators for robotics)

Continuum and Soft Robots

Development, modeling, and control of innovative continuum and soft robotic concepts based on smart material transducers (dielectric elastomers, shape memory alloys)

EDUCATION

Polytechnic University of Bari

Bari, IT

- ◇ Ph.D. in Information and Communication Technology through “Scuola Interpolitecnica di Dottorato”, a high-qualification Ph.D. program involving Polytechnic Universities of Torino, Bari, and Milano, Apr. 2016
- ◇ Master’s Degree in Control Engineering, Dec. 2012 (110/110 with honors)
- ◇ Bachelor’s Degree in Control Engineering, Oct. 2010 (110/110 with honors)

WORK EXPERIENCE

Saarland University,

Saarbrücken, DE

- ◇ Assistant Professor in Adaptive Polymer Systems (with 6-year tenure track to Full Professor) - Intelligent Material Systems Lab **Jan. 2020 - present**
- ◇ Post Doc - Intelligent Material Systems Lab **Apr. 2016 - Dec. 2019**
- ◇ Research Assistant - Intelligent Material Systems Lab **Feb. 2016 - Mar. 2016**

Polytechnic University of Bari,

Bari, IT

- ◇ Research Assistant - Automation and Robotics Lab **Jan. 2016**
- ◇ Ph.D Student - Automation and Robotics Lab **Jan. 2013 - Dec. 2015**

VISITING

Saarland University,

Saarbrücken, DE

Visiting Research Scholar during Ph.D. studies **Feb. 2015 - Dec. 2015**

TEACHING EXPERIENCE

Teaching Responsibility

Saarland University

Saarbrücken, DE

- ◇ **Actuators and Sensors with Intelligent Material Systems II**
Period: Spring 2017 - Spring 2023
Level: Master
- ◇ **Actuators and Sensors with Intelligent Material Systems III**
Period: Fall 2018 - Fall 2023
Level: Master
- ◇ **Actuators and Sensors with Intelligent Material Systems IV**
Period: Fall 2017 - Fall 2023
Level: Master

- ◇ **Smart Materials and Polymers (in cooperation with Prof. Volker Presser and Prof. Markus Gallei)**
Period: Spring 2020 - Spring 2023
Level: Master
- ◇ **Seminar on Modal Analysis (in cooperation with Prof. Kathrin Flaßkamp)**
Period: Spring 2023
Level: Master

Polytechnic University of Bari

Bari, IT

- ◇ **Software-Based Methods for Modern Control Systems Design**
Period: Fall 2020
Level: PhD
- ◇ **Modeling of Smart Material Systems**
Period: Fall 2020
Level: PhD

RESEARCH
PROJECTS

Saarland University

Saarbrücken, DE

- ◇ **DFG project SPP 2206 Cooperative Multistage Multistable Microactuator Systems (Second Funding Period) - DECMAS Phase 2: Dielectric Elastomer Membranes for Cooperative Micro-Actuator/Sensor Concepts**
 Goal: Design, Miniaturization, Fabrication, and Cooperative Control of cooperative micro-actuators based on Dielectric Elastomers
 Role: Coordinator (in cooperation with Prof. Stefan Seelecke, Saarland University, and Prof. Günter Schultes, Saarland University of Applied Science)
 Duration: 36 months, starting from June 2023
 Total funding: c.ca 810 k€
 Individual funding: c.ca 256 k€.
- ◇ **DFG project SPP 2100 Soft Material Robotics Systems (Second Funding Period) - Dielectric Elastomers Phase 2: Soft Material Actuator/Sensor Concepts for Three-Dimensional Soft Robotic Systems**
 Goal: Design, Modeling, and Control of three-dimensional soft robotic systems based on Dielectric Elastomers
 Role: PI (in cooperation with Prof. Stefan Seelecke, Saarland University)
 Duration: 36 months, starting from July 2022
 Total funding: c.ca 492 k€
 Individual funding: c.ca 233 k€.
- ◇ **DFG project SPP 2206 Cooperative Multistage Multistable Microactuator Systems (First Funding Period) - DECMAS: Dielectric Elastomer Membranes for Cooperative Micro-Actuator/Sensor Concepts**
 Goal: Design, Fabrication, Modeling, and Self-Sensing of cooperative micro-actuators based on Dielectric Elastomers
 Role: Coordinator (in cooperation with Prof. Stefan Seelecke, Saarland University, and Prof. Günter Schultes, Saarland University of Applied Science)
 Duration: 36 months, starting from October 2019
 Total funding: c.ca 790 k€
 Individual funding: c.ca 239 k€.
- ◇ **DFG project SPP 2100 Soft Material Robotics Systems (First Funding Period) - Dielectric Elastomers: Soft Material Actuator/Sensor Concepts for Soft Robotic Systems**
 Goal: Design, Modeling, and Control of bi-dimensional soft robotic systems based

on Dielectric Elastomers
Role: Co-PI (in cooperation with Prof. Stefan Seelecke, Saarland University)
Duration: 36 months, starting from July 2019
Total funding: c.ca 525 k€
Individual funding: c.ca 245 k€.

EDITORIAL
ACTIVITIES

Editorial Board in International Peer-Reviewed Journals

- ◇ IEEE/ASME Transactions on Mechatronics - Technical Editor (2022 - present)

Editorial Board in International Conferences

- ◇ Track co-chair (track: Control Systems) - 32th IEEE International Symposium on Industrial Electronics (ISIE) 2023, Helsinki/Espoo, Finland
- ◇ Associate Editor - 10th Vienna International Conference on Mathematical Modelling MATHMOD 2022, Vienna, Austria
- ◇ Conference Committee Member - 1st International Electronic Conference on Actuator Technology: Materials, Devices and Applications IeCAT 2020, online conference

Organization of Special Sessions at International Conferences

- ◇ Co-organizer of Minisymposium “Modeling and Control of Smart Material Systems and Structures” - 10th Vienna International Conference on Mathematical Modelling MATHMOD 2022, Vienna, Austria
- ◇ Co-organizer of Special Session “Intelligent Systems and Technologies for Advanced Manufacturing” - 7th International Conference on Control, Decision and Information Technologies CoDIT 2020, Prague, Czech Republic
- ◇ Organizer of Minisymposium “Modeling and Control of Smart Material Systems” - 9th Vienna International Conference on Mathematical Modelling MATHMOD 2018, Vienna, Austria

HONORS AND
AWARDS

ASME 2022 Student Hardware Award - Third Place **Sep. 2022**

ASME Smart Materials, Adaptive Structures, and Intelligent Structures Conference - “A Novel Compact Concept Design of an SMA Based Endoscope” (reference [107.c] in the publications list)

IEEE Best Paper Award **Apr. 2021**

4th IEEE International Conference on Soft Robotics - “Bistable Actuation in Multi-DoF Soft Robotic Modules Driven by Rolled Dielectric Elastomer Actuators” (reference [83.c] in the publications list)

ASME 2018 Ephraim Garcia Best Paper Award **Sep. 2019**

ASME 2019 Smart Materials, Adaptive Structures, and Intelligent Systems Conference - “A novel dielectric elastomer membrane actuator concept for high-force applications” (reference [21.j] in the publications list)

SPIE Honorable Mention Award **Mar. 2018**

SPIE Smart Structures and Materials+ Nondestructive Evaluation and Health Monitoring - “Self-sensing for robust automatic charge management of dielectric elastomer generators” (reference [34.c] in the publications list)

IEEE/ASME Best Student Paper Award **Aug. 2016**

IEEE/ASME International Conference on Mechatronic and Embedded Systems and Applications - “Self-Sensing at Low Sampling-To-Signal Frequency Ratio: an Improved Algorithm for Dielectric Elastomer Actuators” (reference [21.c] in the publications list)

Admission to High-Qualification Ph.D Program “Scuola Interpolitecnica di Dottorato” **May 2014**

A high-qualification Ph.D program coordinated by the Polytechnic University of Torino, admission restricted to 24 engineering Ph.D students per year among the three Italian Polytechnic Universities of Torino, Bari, and Milano

INVITED TALKS

A bi-stable soft robotic module actuated by dielectric elastomer artificial muscles: design, characterization, modeling, and control **Apr. 2023**

RoboSoft 2023 - IEEE International Conference on Soft Robotics, Workshop “Bi- & Multi-Stability in Soft Robots”, Singapore

Invited by Prof. Amir Gat, Prof. Robert Shepard, Ezra Ben Abu, Dr. Yoav Matia (Workshop organizers)

From Smart Materials to Smart Systems – Modeling, Control, and Self-Sensing of Dielectric Elastomers **Jun. 2021**

EuroEAP 2021 - International conference on Electromechanically Active Polymer (EAP) transducers & artificial muscles, online conference

Invited by Prof. Edwin Jager

Modeling of Dielectric Elastomer Membrane Actuators: From Material to Applications **Oct. 2018**

2018 Sino-German Symposium - Complex material structures for functional ferro-, pyro- and piezoelectric ceramics, polymers and composites, Shanghai, CN

Invited by Prof. Reimund Gerhard and Prof. Xiaoqing Zhang

Advanced Applications of Motion Control Technology - Modeling, Control and Application of Smart Materials Based Actuators and Systems **Oct. 2016**

The 42nd Annual Conference of the IEEE Industrial Electronics Society (IECON2016), co-organized and co-presented with Dr. Leonardo Riccardi, Florence, IT

Invited by Prof. Kenji Natori

SERVICES

Memberships in Scientific Committees

- ◇ Institute of Electrical and Electronics Engineers (IEEE), 2016 - present
- ◇ EuroEAP Society, European Society for Electromechanically Active Polymer Transducers & Artificial Muscles, 2021 - present

PUBLICATIONS

Publication Summary

- ◇ Peer Reviewed Journal Papers: 59
- ◇ International Conference Proceedings: 119
- ◇ Editorial Contributions in Books: 2
- ◇ Patents: 1

Citation indexes

- ◇ Google Scholar: h-index 22, n. of citations: 2064
Link: <https://scholar.google.it/citations?user=F7K3374AAAAJ&hl=it>
- ◇ Scopus: h-index 19, n. of citations: 1369
Link: <https://www.scopus.com/authid/detail.uri?authorId=55970038200>

Journal Papers

- [59.j] M. Bolignari, **G. Rizzello**, L. Zaccarian, and M. Fontana, “Lightweight Human-Friendly Robotic Arm based on Transparent Hydrostatic Transmissions,” *IEEE Transactions on Robotics*, pp. 1-14, 2023 (DOI: 10.1109/TRO.2023.3290310).
- [58.j] C. Perri, B. Holz, P. R. Massenio, D. Naso, and **G. Rizzello**, “Design, Modeling, and Experimental Validation of a High Voltage Driving Circuit for Dielectric Elastomer Actuator,” *IEEE Transactions on Industrial Electronics*, pp. 1-10, 2023 (DOI: 10.1109/TIE.2023.3288190).
- [57.j] **G. Rizzello**, “Robust output regulation of a class of smart actuators described by a minimum phase LPV dynamics,” *Mechatronics*, vol. 94, p. 103003, Oct. 2023 (DOI: 10.1016/j.mechatronics.2023.103003).
- [56.j] M. K. Hoffmann, L. Heib, G. Moretti, **G. Rizzello**, and K. Flaßkamp, “Optimal operation of dielectric elastomer wave energy converters under harmonic and stochastic excitation,” *GAMM Mitteilungen*, p. e202300010, May 2023 (DOI: 10.1002/gamm.202300010).
- [55.j] P. R. Massenio, M. Tipaldi, **G. Rizzello**, E. Brescia, G. L. Cascella, and D. Naso, “Gain-Scheduled Structured Control in DC Microgrids,” *IEEE Transactions on Control Systems Technology*, pp. 1-12, 2023 (DOI: 10.1109/TCST.2023.3269227).
- [54.j] S. Seelecke, J. Neu, S. Croce, J. Hubertus, G. Schultes, and **G. Rizzello**, “Dielectric Elastomer Cooperative Microactuator Systems—DECMAS,” *Actuators*, vol. 12, no. 4, p. 141, March 2023 (DOI: 10.3390/act12040141).
- [53.j] M. A. Mandolino, D. Scholtes, F. Ferrante, and **G. Rizzello**, “A Physics-Based Hybrid Dynamical Model of Hysteresis in Polycrystalline Shape Memory Alloy Wire Transducers,” *IEEE/ASME Transactions on Mechatronics*, p. 1-12, 2023 (DOI: 10.1109/TMECH.2023.3253250).
- [52.j] J. Hubertus, S. Croce, J. Neu, S. Seelecke, **G. Rizzello**, and G. Schultes, “Laser Structuring of Thin Metal Films of Compliant Electrodes on Dielectric Elastomers,” *Advanced Functional Materials*, vol. 33, no. 16, p. 2214176, Apr. 2023 (DOI: 10.1002/adfm.202214176).
- [51.j] S. Gratz-Kelly, T. Krüger, **G. Rizzello**, S. Seelecke, and G. Moretti, “An audio-tactile interface based on dielectric elastomer actuators,” *Smart Materials and Structures*, vol. 32, no. 3, p. 034005, Mar. 2023 (DOI: 10.1088/1361-665X/acb6da).
- [50.j] **G. Rizzello**, “A Review of Cooperative Actuator and Sensor Systems Based on Dielectric Elastomer Transducers,” *Actuators*, vol. 12, no. 2, p. 46, Jan. 2023 (DOI: 10.3390/act12020046).
- [49.j] T. P. Willian, B. Fasolt, P. Motzki, **G. Rizzello**, and S. Seelecke, “Effects of Electrode Materials and Compositions on the Resistance Behavior of Dielectric Elastomer Transducers,” *Polymers*, vol. 15, no. 2, p. 310, Jan. 2023 (DOI: 10.3390/polym15020310).
- [48.j] J. Neu, S. Croce, T. Willian, J. Hubertus, G. Schultes, S. Seelecke, and **G. Rizzello**, “Distributed Electro-Mechanical Coupling Effects in a Dielectric Elastomer Membrane Array,” *Experimental Mechanics*, vol. 63, pp. 79-95, Jan. 2023 (DOI: 10.1007/s11340-022-00892-0).
- [47.j] M. Baltes, J. Kunze, J. Prechtel, S. Seelecke, and **G. Rizzello**, “A bi-stable soft robotic bendable module driven by silicone dielectric elastomer actuators: design, characterization, and parameter study,” *Smart Materials and Structures*, vol. 31, no. 11, p. 114002, Nov. 2022 (DOI: 10.1088/1361-665X/ac96df).

- [46.j] S. Croce, J. Neu, G. Moretti, J. Hubertus, G. Schultes, and **G. Rizzello**, “Finite element modeling and validation of a soft array of spatially coupled dielectric elastomer transducers,” *Smart Materials and Structures*, vol. 31, no. 8, p. 084001, Aug. 2022 (DOI: 10.1088/1361-665X/ac78ad).
- [45.j] S. Gratz-Kelly, **G. Rizzello**, M. Fontana, S. Seelecke, and G. Moretti, “A Multi-Mode, Multi-Frequency Dielectric Elastomer Actuator,” *Advanced Functional Materials*, vol. 33, no. 34, p. 2201889, Aug. 2022 (DOI: 10.1002/adfm.202201889).
- [44.j] R. Britz, **G. Rizzello**, and P. Motzki, “High-Speed Antagonistic Shape Memory Actuator for High Ambient Temperatures,” *Advanced Engineering Materials*, vol. 24, no. 9, p. 2200205, Sep. 2022 (DOI: 10.1002/adem.202200205).
- [43.j] G. Moretti, **G. Rizzello**, M. Fontana, and S. Seelecke, “High-frequency voltage-driven vibrations in dielectric elastomer membranes,” *Mechanical Systems and Signal Processing*, vol. 168, p. 108677, Apr. 2022 (DOI: 10.1016/j.ymsp.2021.108677).
- [42.j] J. Prechtel, J. Kunze, G. Moretti, D. Bruch, S. Seelecke, and **G. Rizzello**, “Modeling and experimental validation of thin, tightly rolled dielectric elastomer actuators,” *Smart Materials and Structures*, vol. 31, no. 1, p. 015008, Nov. 2021 (DOI: 10.1088/1361-665X/ac34be).
- [41.j] S. Croce, J. Neu, J. Hubertus, S. Seelecke, G. Schultes, and **G. Rizzello**, “Model-Based Design Optimization of Soft Polymeric Domes Used as Non-linear Biasing Systems for Dielectric Elastomer Actuators,” *Actuators*, vol. 10, no. 9, p. 209, Aug. 2021 (DOI: 10.3390/act10090209).
- [40.j] J. Hubertus, J. Neu, S. Croce, **G. Rizzello**, S. Seelecke, and G. Schultes, “Nanoscale Nickel-based Thin Films as Highly Conductive Electrodes for Dielectric Elastomer Applications with Extremely High Stretchability up to 200 %,” *ACS Applied Materials & Interfaces*, vol. 13, no. 33, pp. 39894-39904, Aug. 2021 (DOI: 10.1021/acsami.1c10686).
- [39.j] J. Neu, J. Hubertus, S. Croce, G. Schultes, S. Seelecke, and **G. Rizzello**, “Fully Polymeric Domes as High-Stroke Biasing System for Soft Dielectric Elastomer Actuators,” *Frontiers in Robotics and AI*, vol. 8, p. 171, Jun. 2021 (DOI: 10.3389/frobt.2021.695918).
- [38.j] J. Kunze, J. Prechtel, D. Bruch, B. Fasolt, S. Nalbach, P. Motzki, S. Seelecke, and **G. Rizzello**, “Design, Manufacturing, and Characterization of Thin, Core-Free, Rolled Dielectric Elastomer Actuators,” *Actuators*, vol. 10, no. 4, p. 69, Mar. 2021 (DOI: 10.3390/act10040069).
- [37.j] M. A. Mandolino, F. Ferrante, and **G. Rizzello**, “A Hybrid Dynamical Modeling Framework for Shape Memory Alloy Wire Actuated Structures,” *IEEE Robotics and Automation Letters*, vol. 6, no. 2, pp. 3886-3893, Apr. 2021 (DOI: 10.1109/LRA.2021.3067254).
- [36.j] M. Bolignari, **G. Rizzello**, L. Zaccarian, and M. Fontana, “Smith-predictor-based torque control of a rolling diaphragm hydrostatic transmission,” *IEEE Robotics and Automation Letters*, vol. 6, no. 2, pp. 2970-2977, Apr. 2021 (DOI: 10.1109/LRA.2021.3062310).
- [35.j] F. Simone, **G. Rizzello**, S. Seelecke, and P. Motzki, “A soft five-fingered hand actuated by Shape Memory Alloy wires: design, manufacturing, and evaluation,” *Frontiers in Robotics and AI*, vol. 7, p. 608841, Dec. 2020 (DOI: 10.3389/frobt.2020.608841).
- [34.j] P. R. Massenio, **G. Rizzello**, G. Comitangelo, D. Naso, and S. Seelecke, “Reinforcement Learning Based Minimum Energy Position Control of Dielectric Elastomer Actuators,” *IEEE Transactions on Control Systems Technology*, vol. 29, no. 4, pp. 1674-1688, Jul. 2021 (DOI: 10.1109/TCST.2020.3022951).

- [33.j] **G. Rizzello**, P. Loew, L. Agostini, M. Fontana, and S. Seelecke, “A lumped parameter model for strip-shaped dielectric elastomer membrane transducers with arbitrary aspect ratio,” *Smart Materials and Structures*, vol. 29, no. 11, p. 115030, Sep. 2020 (DOI: 10.1088/1361-665X/abb09e).
- [32.j] P. Montegiglio, C. Maruccio, G. Acciani, **G. Rizzello**, and S. Seelecke, “Nonlinear multi-scale dynamics modeling of piezoceramic energy harvesters with ferroelectric and ferrolelastic hysteresis,” *Nonlinear Dynamics*, vol. 100, pp. 1985-2003, May 2020 (DOI: 10.1007/s11071-020-05660-0).
- [31.j] P. Linnebach, **G. Rizzello**, and S. Seelecke, “Design and Validation of a Dielectric Elastomer Membrane Actuator Driven Pneumatic Pump,” *Smart Materials and Structures*, vol. 29, no. 7, p. 075021, Jul. 2020 (DOI: 10.1088/1361-665X/ab8a01).
- [30.j] S. Nalbach, R. M. Banda, S. Croce, **G. Rizzello**, D. Naso, and S. Seelecke, “TModeling and Design Optimization of a Rotational Soft Robotic System Driven by Double Cone Dielectric Elastomer Actuators,” *Frontiers in Robotics and AI*, vol. 6, p. 150, Jan. 2020 (DOI: 10.3389/frobt.2019.00150).
- [29.j] **G. Rizzello**, P. Serafino, D. Naso, and S. Seelecke, “Towards Sensorless Soft Robotics: Self-Sensing Stiffness Control of Dielectric Elastomer Actuators,” *IEEE Transactions on Robotics*, vol. 39, no. 1, pp. 174-188, Feb. 2020 (DOI: 10.1109/TRO.2019.2944592).
- [28.j] F. Simone, **G. Rizzello**, and S. Seelecke, “A Finite Element Framework for a Shape Memory Alloy Actuated Finger,” *Journal of Intelligent Material Systems and Structures*, vol. 30, no. 14, pp. 2052-2064, Jul. 2019 (DOI: 10.1177/1045389X19861787).
- [27.j] S. Nalbach, **G. Rizzello**, and S. Seelecke, “Experimental Analysis of Continuous Vibrations in Dielectric Elastomer Membrane Actuators via Three-Dimensional Laser Vibrometry,” *Journal of Vibration and Acoustics*, vol. 141, no. 5, p. 054502, Jun. 2019 (DOI: 10.1115/1.4043715).
- [26.j] M. Hill, **G. Rizzello**, and S. Seelecke, “Development and Validation of a Fatigue Testing Setup for Dielectric Elastomer Membrane Actuators,” *Smart Materials and Structures*, vol. 28, no. 5, p. 055029, May 2019 (DOI: 10.1088/1361-665X/ab1347).
- [25.j] P. Loew, M. Brill, **G. Rizzello**, and S. Seelecke, “Development of a non-intrusive pressure sensor for polymer tubes based on dielectric elastomer membranes,” *Sensors & Actuators: A. Physical*, vol. 292, pp. 1-10, Jun. 2019 (DOI: 10.1016/j.sna.2019.03.006).
- [24.j] P. Linnebach, F. Simone, **G. Rizzello**, and S. Seelecke, “Development, manufacturing, and validation of a dielectric elastomer membrane actuator-driven contactor,” *Journal of Intelligent Material Systems and Structures*, vol. 30, no. 4, pp. 636-648, Mar. 2019 (DOI: 10.1177/1045389X18818778).
- [23.j] P. Loew, **G. Rizzello**, and S. Seelecke, “A Novel Biasing Mechanism for Circular out-of-plane Dielectric Actuators Based on Permanent Magnets,” *Mechatronics*, vol. 56, pp. 48-57, Dec. 2018 (DOI: 10.1016/j.mechatronics.2018.10.005).
- [22.j] **G. Rizzello**, M. A. Mandolino, M. Schmidt, D. Naso, and S. Seelecke, “An accurate dynamic model for polycrystalline shape memory alloy wire actuators and sensors,” *Smart Materials and Structures*, vol. 28, no. 2, Jan. 2019 (DOI: 10.1088/1361-665X/aae3b8).
- [21.j] S. Hau, **G. Rizzello**, and S. Seelecke, “A novel dielectric elastomer membrane actuator concept for high-force applications,” *Extreme Mechanics Letters*, vol. 23, pp. 24-28, Sep. 2018 (DOI: 10.1016/j.eml.2018.07.002).

- [20.j] P. Motzki, T. Gorges, M. Kappel, M. Schmidt, **G. Rizzello**, and S. Seelecke, "High-Speed and High-Efficiency Shape Memory Alloy Actuation," *Smart Materials and Structures*, vol. 27, no. 7, p. 075047, Jun. 2018 (DOI: 10.1088/1361-665X/aac9e1).
- [19.j] F. Simone, P. Linnebach, **G. Rizzello**, and S. Seelecke, "A Finite Element Model of Rigid-Body Structures Actuated by Dielectric Elastomer Actuators," *Smart Materials and Structures*, vol. 27, no. 6, p. 065001, May 2018 (DOI: 10.1088/1361-665X/aabe08).
- [18.j] S. Hau, D. Bruch, **G. Rizzello**, P. Motzki, and S. Seelecke, "Silicone based dielectric elastomer strip actuators coupled with non-linear biasing elements for large actuation strains," *Smart Materials and Structures*, vol. 27, no. 7, p. 074003, Jun. 2018 (DOI: 10.1088/1361-665X/aab7d8).
- [17.j] M. Hill, **G. Rizzello**, and S. Seelecke, "Development and Experimental Characterization of a Dielectric Elastomer Membrane Strip Actuator," *Smart Materials and Structures*, vol. 27, no. 2, p. 025019, Jan. 2018 (DOI: 10.1088/1361-665X/aaa695).
- [16.j] S. Hau, A. York, **G. Rizzello**, and S. Seelecke, "Performance prediction and scaling laws of circular dielectric elastomer membrane actuators," *ASME Journal of Mechanical Design*, vol. 140, no. 11, p. 113501, Nov. 2018 (DOI: 10.1115/1.4039104).
- [15.j] **G. Rizzello**, F. Fugaro, D. Naso, and S. Seelecke, "Simultaneous Self-Sensing of Displacement and Force for Soft Dielectric Elastomer Actuators," *IEEE Robotics and Automation Letters*, vol. 3, no. 2, pp. 1230-1236, Apr. 2018 (DOI: 10.1109/LRA.2018.2795016).
- [14.j] B. Fasolt, M. Hodgins, **G. Rizzello**, and S. Seelecke, "Effect of screen printing parameters on sensor and actuator performance of dielectric elastomer (DE) membranes," *Sensors & Actuators: A. Physical*, vol. 265, pp. 10-19, Oct. 2017 (DOI: 10.1016/j.sna.2017.08.028).
- [13.j] F. Simone, **G. Rizzello**, and S. Seelecke, "Metal Muscles and Nerves - A Self-Sensing SMA-Actuated Hand Concept," *Smart Materials and Structures*, vol. 26, no. 9, p. 095007, Aug. 2017 (DOI: 10.1088/1361-665X/aa7ad5).
- [12.j] **G. Rizzello**, F. Ferrante, D. Naso, and S. Seelecke, "Robust Interaction Control of a Dielectric Elastomer Actuator with Variable Stiffness," *IEEE/ASME Transactions on Mechatronics*, vol. 22, no. 4, pp. 1705-1716, Aug. 2017 (DOI: 10.1109/TMECH.2017.2713832).
- [11.j] M. Hill, **G. Rizzello**, and S. Seelecke, "Development and Experimental Characterization of a Pneumatic Valve Actuated by a Dielectric Elastomer Membrane," *Smart Materials and Structures*, vol. 26, no. 8, p. 085023, Jul. 2017 (DOI: 10.1088/1361-665X/aa746d).
- [10.j] S. Hau, **G. Rizzello**, M. Hodgins, A. York, and S. Seelecke, "Design and Control of a High-Speed Positioning System Based on Dielectric Elastomer Membrane Actuators," *IEEE/ASME Transactions on Mechatronics*, vol. 22, no. 3, pp. 1259-1267, Jun. 2017 (DOI: 10.1109/TMECH.2017.2681839).
- [9.j] **G. Rizzello**, D. Naso, A. York, and S. Seelecke, "A Self-Sensing Approach for Dielectric Elastomer Actuators Based on Online Estimation Algorithms," *IEEE/ASME Transactions on Mechatronics*, vol. 22, no. 2, pp. 728-738, Apr. 2017 (DOI: 10.1109/TMECH.2016.2638638).
- [8.j] A. Guagnano, **G. Rizzello**, F. Cupertino, D. and Naso, "Robust Control of High-Speed Synchronous Reluctance Machines", *IEEE Transactions on Industry Applications*, vol. 52, no. 5, pp. 3990-4000, Sep.-Oct. 2016 (DOI: 10.1109/TIA.2016.2574774).

- [7.j] **G. Rizzello**, D. Naso, A. York, and S. Seelecke, “Closed loop control of dielectric elastomer actuators based on self-sensing displacement feedback,” *Smart Materials and Structures*, vol. 25, no. 3, p. 035034, Feb. 2016 (DOI: 10.1088/0964-1726/25/3/035034).
- [6.j] **G. Rizzello**, D. Naso, B. Turchiano, and S. Seelecke, “Robust position control of dielectric elastomer actuators based on LMI optimization,” *IEEE Transactions on Control Systems Technology*, vol. 24, no. 6, pp. 1909–1921, Nov. 2016 (DOI: 10.1109/TCST.2016.2519839).
- [5.j] M. Hodgins, **G. Rizzello**, A. York, D. Naso, and S. Seelecke, “A smart experimental technique for the optimization of Dielectric Elastomer Actuator (DEA) systems,” *Smart Materials and Structures*, vol. 24, no. 9, p. 094002, Aug. 2015 (DOI: 10.1088/0964-1726/24/9/094002).
- [4.j] **G. Rizzello**, M. Hodgins, D. Naso, A. York, and S. Seelecke, “Modeling of the effects of the electrical dynamics on the electromechanical response of a DEAP circular actuator with a mass-spring load,” *Smart Materials and Structures*, vol. 24, no. 9, p. 094003, Aug. 2015 (DOI: 10.1088/0964-1726/24/9/094003).
- [3.j] **G. Rizzello**, M. Hodgins, D. Naso, A. York, and S. Seelecke, “Dynamic Modeling and Experimental Validation of an Annular Dielectric Elastomer Actuator With a Biasing Mass”, *Journal of Vibration and Acoustics*, vol. 137, no. 1, p. 011014, Feb. 2015 (DOI: 10.1115/1.4028456).
- [2.j] **G. Rizzello**, D. Naso, A. York, and S. Seelecke, “Modeling, identification, and control of a dielectric electro-active polymer positioning system,” *IEEE Transactions on Control Systems Technology*, vol. 23, no. 2, pp. 632–643, Mar. 2015 (DOI: 10.1109/TCST.2014.2338356).
- [1.j] M. Hodgins, **G. Rizzello**, D. Naso, A. York, and S. Seelecke, “An electro-mechanically coupled model for the dynamic behavior of a dielectric electro-active polymer actuator,” *Smart Materials and Structures*, vol. 23, no. 10, p. 104006, Oct. 2014 (DOI: 10.1088/0964-1726/23/10/104006).

International Conference Proceedings¹

- [119.c] R. Barakat, Y. Goergen, R. Britz, M. Mandolino, **G. Rizzello**, and P. Motzki, “Comparative Review of Two Different Design Approaches for SMA Based Continuum Robots,” in *ASME 2023 Conference on Smart Materials, Adaptive Structures and Intelligent Systems*, 2023, pp. 1-5.
- [118.c] K. J. Koshiya, **G. Rizzello**, and P. Motzki, “An Embedded System for Data-Based Self-Sensing in Shape Memory Alloy Wire Actuators,” in *ASME 2023 Conference on Smart Materials, Adaptive Structures and Intelligent Systems*, 2023, pp. 1-6.
- [117.c] S. Gratz-Kelly, B. Holz, T. Krüger, S. Seelecke, **G. Rizzello**, P. Motzki, and G. Moretti, “An Integrated Audio-Tactile Interface Based on Dielectric Elastomer Actuators for User Interaction,” in *ASME 2023 Conference on Smart Materials, Adaptive Structures and Intelligent Systems*, 2023, pp. 1-6.
- [116.c] P. R. Massenio, **G. Rizzello**, M. Tipaldi, and D. Naso, “Gain-Scheduled Control of LPV Systems with Structural Constraints,” in *Proc. of 22th World Congress of the International Federation of Automatic Control*, 2023, pp. 1-6.

¹References marked with * indicate the conferences in which Dr. Rizzello held personally oral presentation of the scientific contribution published in the proceedings.

- [115.c] M. K. Hoffmann, L. Heib, **G. Rizzello**, G. Moretti, and K. Flaßkamp, “Multi-Objective Model-Predictive Control for Dielectric Elastomer Wave Harvesters,” in *Proc. of 22th World Congress of the International Federation of Automatic Control*, 2023, pp. 1-6.
- [114.c] M. A. Mandolino, F. Ferrante, and **G. Rizzello**, “Hybrid Output Regulation of Hysteretic Actuators based on Single-Crystal Shape Memory Alloy Wires,” in *Proc. of 22th World Congress of the International Federation of Automatic Control*, 2023, pp. 1-6.
- [113.c] G. Soleti, J. Prechtel, P. R. Massenio, M. Baltes, and **G. Rizzello**, “Energy based control of a bi-stable and underactuated soft robotic system based on dielectric elastomer actuators,” in *Proc. of 22th World Congress of the International Federation of Automatic Control*, 2023, pp. 1-6.
- [112.c] J. Prechtel, F. Scherf, J. Kunze, K. Flaßkamp, and **G. Rizzello**, “An energy-based model for both rate-dependent and rate-independent hysteretic effects in uniaxially-loaded dielectric elastomer actuators,” in *Electroactive Polymer Actuators and Devices (EAPAD) XXV*, 2023, p. 124820Q (DOI: 10.1117/12.2657685).
- [111.c] S. Gratz-Kelly, T. Krüger, S. Seelecke, **G. Rizzello**, and G. Moretti, “A self-sensing approach for multi-mode dielectric elastomer actuator-loudspeaker devices,” in *Electroactive Polymer Actuators and Devices (EAPAD) XXV*, 2023, p. 1248204 (DOI: 10.1117/12.2657884).
- [110.c] K. Koshiya, S. Gratz-Kelly, P. Motzki, and **G. Rizzello**, “An Embedded Self-Sensing Motion Control System for Strip-Shaped Dielectric Elastomer Actuators,” in *Electroactive Polymer Actuators and Devices (EAPAD) XXV*, 2023, p. 124820I (DOI: 10.1117/12.2657131).
- [109.c] P. R. Massenio, **G. Rizzello**, O. Pohudina, R. Bartolo, and D. Naso, “Mixed $\mathcal{H}_\infty/\mathcal{H}_2$ Control of a Soft Robotic Structure Actuated by Dielectric Elastomers,” in *2022 IEEE Industrial Electronics Society 1st Annual On-Line Conference*, 2022, pp. 1-6 (DOI: 10.1109/ONCON56984.2022.10126931).
- [108.c] G. Moretti and **G. Rizzello**, “Numerical Investigation of Bistable Energy Harvesting Based on Silicone Dielectric Elastomer Generators” in *ASME 2022 Conference on Smart Materials, Adaptive Structures and Intelligent Systems*, 2022, p. V001T03A011 (DOI: 10.1115/SMASIS2022-90988).
- [107.c] Y. Goergen, R. Britz, M. Mandolino, **G. Rizzello**, and P. Motzki, “A Novel Compact Concept Design of an SMA Based Endoscope” in *ASME 2022 Conference on Smart Materials, Adaptive Structures and Intelligent Systems*, 2022, p. V001T04A010 (DOI: 10.1115/SMASIS2022-90957).
- [106.c] G. Moretti and **G. Rizzello**, “Model-Based Parameter Analysis of Dielectric Elastomer Loudspeakers” in *2022 IEEE/ASME International Conference on Advanced Intelligent Mechatronics*, 2022, pp. 1129-1135 (DOI: 10.1109/AIM52237.2022.9863404).
- [105.c] J. Prechtel, M. Baltes, J. Kunze, S. Seelecke, and **G. Rizzello**, “Towards Sensorless Configuration Estimation in Multi-DoF Soft Robotic Structures Driven by Rolled Dielectric Elastomer Actuators” in *2022 IEEE/ASME International Conference on Advanced Intelligent Mechatronics*, 2022, pp. 1152-1158 (DOI: 10.1109/AIM52237.2022.9863250).
- [104.c] P. R. Massenio, J. Prechtel, D. Naso, and **G. Rizzello**, “Nonlinear Optimal Control of a Soft Robotic Structure Actuated by Dielectric Elastomer Artificial Muscles” in *2022 IEEE/ASME International Conference on Advanced Intelligent Mechatronics*, 2022, pp. 644-649 (DOI: 10.1109/AIM52237.2022.9863262).

- [103.c] M. Baltes, J. Prechtel, J. Kunze, and **G. Rizzello**, “Design and Modeling of a Soft Robotic bendable module with Artificial Muscle Fibers” in *International Conference and Exhibition on New Actuator Systems and Applications ACTUATOR 22*, 2022, pp. 1-4.
- [102.c] D. Bevilacqua, G. Soleti, **G. Rizzello**, and P. Motzki, “Bio-Inspired Flapping Wing Antagonist Actuation with SMA Wires” in *International Conference and Exhibition on New Actuator Systems and Applications ACTUATOR 22*, 2022, pp. 1-4.
- [101.c] R. Britz, M. Mandolino, Y. Goergen, **G. Rizzello**, and P. Motzki, “Development of a SMA driven articulation and autofocus mechanism for endoscope applications” in *International Conference and Exhibition on New Actuator Systems and Applications ACTUATOR 22*, 2022, pp. 1-4.
- [100.c] M. Baltes, J. Kunze, J. Prechtel, P. Motzki, S. Seelecke, and **G. Rizzello**, “Soft Robotic Tentacle Arm Element Actuated by Rolled Dielectric Elastomer Artificial Muscles” in *Electroactive Polymer Actuators and Devices (EAPAD) XXIV*, 2022, p. 1204207 (DOI: 10.1117/12.2612516).
- [99.c] G. Moretti, **G. Rizzello**, M. Fontana, and S. Seelecke, “Finite element modelling of the vibro-acoustic response in dielectric elastomer membranes” in *Electroactive Polymer Actuators and Devices (EAPAD) XXIV*, 2022, p. 120420C (DOI: 10.1117/12.2612784).
- [98.c] S. Croce, J. Neu, J. Hubertus, S. Seelecke, G. Schultes, and **G. Rizzello**, “Finite Element Modeling and Parameter Study of a Fully-Polymeric Array of Coupled Dielectric Elastomers” in *Electroactive Polymer Actuators and Devices (EAPAD) XXIV*, 2022, p. 120420B (DOI: 10.1117/12.2612608).
- [97.c] J. Neu, S. Croce, J. Hubertus, G. Schultes, S. Seelecke, and **G. Rizzello**, “Experimental characterization of the mechanical coupling in a DE-array” in *Electroactive Polymer Actuators and Devices (EAPAD) XXIV*, 2022, p. 120420H (DOI: 10.1117/12.2612804).
- [96.c] G. Moretti and **G. Rizzello**, “A linear parameter-varying modelling approach for dielectric elastomer loudspeakers” in *10th Vienna International Conference on Mathematical Modelling*, 2022, pp. 534-539 (DOI: 10.1016/j.ifacol.2022.09.150).
- [95.c] M. K. Hoffmann, G. Moretti, **G. Rizzello**, and K. Flaßkamp, “Multi-objective optimal control for energy extraction and lifetime maximisation in dielectric elastomer wave energy converters” in *10th Vienna International Conference on Mathematical Modelling*, 2022, pp. 546-551 (DOI: 10.1016/j.ifacol.2022.09.152).
- [94.c] M. Herrmann-Wicklmayr, **G. Rizzello**, and K. Flaßkamp, “Numerically Efficient Discrete-Time Dielectric Elastomer Actuators Models for Optimal Control” in *10th Vienna International Conference on Mathematical Modelling*, 2022, pp. 540-545 (DOI: 10.1016/j.ifacol.2022.09.151).
- [93.c] M. A. Mandolino, Y. Goergen, P. Motzki, and **G. Rizzello**, “Design and Characterization of a Fully Integrated Continuum Robot Actuated by Shape Memory Alloy Wires” in *IEEE 17th International Workshop on Advanced Motion Control*, 2022, pp. 6-11 (DOI: 10.1109/AMC51637.2022.9729267).
- [92.c] S. Croce, G. Moretti, J. Neu, J. Hubertus, S. Seelecke, G. Schultes, and **G. Rizzello**, “Finite Element Modeling and Simulation of a Soft Array of Dielectric Elastomer Actuators” in *ASME 2021 Conference on Smart Materials, Adaptive Structures and Intelligent Systems*, 2021, p. V001T07A003 (DOI: 10.1115/SMASIS2021-67752).

- [91.c] L. Zimmer, R. Britz, Y. Goergen, **G. Rizzello**, T. Pohlemann, M. Orth, B. Ganse, S. Seelecke, and P. Motzki, “A SMA-Based Multifunctional Implant for Improved Bone Fracture Healing” in *ASME 2021 Conference on Smart Materials, Adaptive Structures and Intelligent Systems*, 2021, p. V001T05A001 (DOI: 10.1115/SMASIS2021-67261).
- [90.c] C. Perri, S. Lenz, **G. Rizzello**, S. Seelecke, and D. Naso, “Modeling and Validation of a High Voltage Driving Circuit for Dielectric Elastomer Actuators” in *IEEE 30th International Symposium on Industrial Electronics (ISIE)*, 2021, pp. 1-6 (DOI: 10.1109/ISIE45552.2021.9576391).
- [89.c] M. A. Mandolino, F. Ferrante, and **G. Rizzello**, “A Hybrid Dynamical Modeling Framework for Shape Memory Alloy Wire Actuated Structures” in *IEEE International Conference on Robotics and Automation (ICRA)*, 2021, pp. 1-7.
- [88.c] M. Bolignari, **G. Rizzello**, L. Zaccarian, and M. Fontana, “Smith-predictor-based torque control of a rolling diaphragm hydrostatic transmission” in *IEEE International Conference on Robotics and Automation (ICRA)*, 2021, pp. 1-8.
- [87.c] J. Neu, S. Croce, J. Hubertus, G. Schultes, S. Seelecke, and **G. Rizzello**, “Characterization and Modeling of an Array of Dielectric Elastomer Taxels” in *Electroactive Polymer Actuators and Devices (EAPAD) XXIII*, 2021, p. 115870R (DOI: 10.1117/12.2582943).
- [86.c] J. Prechtel, J. Kunze, D. Bruch, S. Seelecke, and **G. Rizzello**, “Modeling and Parameter Identification of Rolled Dielectric Elastomer Actuators for Soft Robots” in *Electroactive Polymer Actuators and Devices (EAPAD) XXIII*, 2021, p. 115871H (DOI: 10.1117/12.2581019).
- [85.c] G. Moretti, **G. Rizzello**, M. Fontana, and S. Seelecke, “A multi-domain dynamical model for cone-shaped dielectric elastomer loudspeakers” in *Electroactive Polymer Actuators and Devices (EAPAD) XXIII*, 2021, p. 115871K (DOI: 10.1117/12.2581718).
- [84.c] S. Gratz-Kelly, B. Fasolt, S. Nalbach, S. Seelecke, P. Motzki, and **G. Rizzello**, “Dielektrische Elastomere als Aktor- und Sensorelemente in tragbaren Assistenztools” in *VDI Fachtagung Mechatronik*, 2021, pp. 1-3.
- [83.c] J. Prechtel, J. Kunze, D. Bruch, S. Seelecke, and **G. Rizzello**, “Bistable Actuation in Multi-DoF Soft Robotic Modules Driven by Rolled Dielectric Elastomer Actuators” in *4th IEEE International Conference on Soft Robotics*, 2021, pp. 82-89 (DOI: 10.1109/RoboSoft51838.2021.9479246).
- [82.c] J. Hubertus, S. Croce, J. Neu, **G. Rizzello**, S. Seelecke, and G. Schultes, “Electromechanical characterization and laser structuring of Ni-based sputtered metallic compliant electrodes for DE applications” in *17th International Conference on New Actuators*, 2021, pp. 1-4.
- [81.c] J. Neu, S. Croce, J. Hubertus, **G. Rizzello**, G. Schultes, and S. Seelecke, “Design and characterization of polymeric domes as biasing elements for dielectric elastomer membrane actuators” in *17th International Conference on New Actuators*, 2021, pp. 1-4.
- [80.c] S. Croce, J. Neu, J. Hubertus, G. Schultes, S. Seelecke, and **G. Rizzello**, “Modeling and simulation of compliant biasing systems for dielectric elastomer membranes based on polymeric domes” in *17th International Conference on New Actuators*, 2021, pp. 1-4.
- [79.c] M. A. Mandolino, F. Welsch, S.-M. Kirsch, N. Michaelis, **G. Rizzello**, A. Schütze, and S. Seelecke, “Hybrid dynamical model for elastocaloric heating and cooling device based on Shape Memory Alloy wires” in *17th International Conference on New Actuators*, 2021, pp. 1-4.

- [78.c] J. Prechtl, J. Kunze, S. Seelecke, and **G. Rizzello**, “Soft Robotic Module Actuated by Silicone-Based Rolled Dielectric Elastomer Actuators - Modeling and Simulation” in *17th International Conference on New Actuators*, 2021, pp. 1-4.
- [77.c] J. Prechtl, S. Seelecke, P. Motzki, and **G. Rizzello**, “Model-Based, Self-Sensing Actuator System based on antagonistic SMA Wires” in *17th International Conference on New Actuators*, 2021, pp. 1-4.
- [76.c] L. Zimmer, F. Welsch, S.-M. Kirsch, **G. Rizzello**, S. Seelecke, and P. Motzki, “Development of an SMA based End-effector Prototype for Material Handling in Manufacturing Processes” in *17th International Conference on New Actuators*, 2021, pp. 1-3.
- [75.c] J. Kunze, J. Prechtl, D. Bruch, S. Nalbach, P. Motzki, S. Seelecke, and **G. Rizzello**, “Concept and Fabrication of Silicone-based Rolled Dielectric Elastomer Actuators (RDEAs) for Soft Robots” in *17th International Conference on New Actuators*, 2021, pp. 1-4.
- [74.c] S.-M. Kirsch, F. Welsch, L. Ehl, S. Seelecke, **G. Rizzello**, and P. Motzki, “SMA Micro-Wire Bundle - Mechanical and Electrical Concepts,” in *17th International Conference on New Actuators*, 2021, pp. 1-5.
- [73.c] J. Hubertus, S. Croce, J. Neu, **G. Rizzello**, S. Seelecke, and G. Schultes, “Influence of residual stresses of sputtered thin film electrodes for dielectric elastomer applications,” in *The 1st International Electronic Conference on Actuator Technology: Materials, Devices and Applications*, 2020, p. 2 (DOI: 10.3390/IeCAT2020-08492).
- [72.c] J. Neu, S. Croce, J. Hubertus, G. Schultes, **G. Rizzello**, and S. Seelecke, “Assembly and characterization of a DE actuator based on polymeric domes as biasing element,” in *The 1st International Electronic Conference on Actuator Technology: Materials, Devices and Applications*, 2020, p. 24 (DOI: 10.3390/IeCAT2020-08490).
- [71.c] S. Croce, J. Neu, J. Hubertus, S. Seelecke, G. Schultes, and **G. Rizzello**, “Modeling and simulation of an array of Dielectric Elastomeric Actuator Membranes,” in *The 1st International Electronic Conference on Actuator Technology: Materials, Devices and Applications*, 2020, p. 28 (DOI: 10.3390/IeCAT2020-08489).
- [70.c] R. Britz, S. Seelecke, **G. Rizzello**, and P. Motzki, “Decoupled Antagonistic SMA Actuator for Valve Applications” in *ASME 2020 Conference on Smart Materials, Adaptive Structures and Intelligent Systems*, 2020, p. V001T02A001 (DOI: 10.1115/SMASIS2020-2214).
- [69.c] L. Zimmer, F. Welsch, S.-M. Kirsch, **G. Rizzello**, S. Seelecke, and P. Motzki, “Adaptive Material Handling System Based on Shape Memory Alloy Actuators” in *ASME 2020 Conference on Smart Materials, Adaptive Structures and Intelligent Systems*, 2020, p. V001T04A016 (DOI: 10.1115/SMASIS2020-2280).
- [68.c] D. Scholtes, S. Seelecke, **G. Rizzello**, and P. Motzki, “Design of a Compliant Industrial Gripper Driven by a Bistable Shape Memory Alloy Actuator,” in *ASME 2020 Conference on Smart Materials, Adaptive Structures and Intelligent Systems*, 2020, p. V001T04A001 (DOI: 10.1115/SMASIS2020-2204).
- [67.c] Y. Goergen, **G. Rizzello**, S. Seelecke, and P. Motzki, “Modular Design of an SMA Driven Continuum Robot,” in *ASME 2020 Conference on Smart Materials, Adaptive Structures and Intelligent Systems*, 2020, p. V001T04A007 (DOI: 10.1115/SMASIS2020-2213).

- [66.c] T. Gorges, **G. Rizzello**, S. Seelecke, and P. Motzki, “High Voltage AC Control of SMA Wires,” in *ASME 2020 Conference on Smart Materials, Adaptive Structures and Intelligent Systems*, 2020, p. V001T02A003 (DOI: 10.1115/SMASIS2020-2238).
- [65.c] F. Welsch, S.-M. Kirsch, N. Michaelis, M. A. Mandolino, A. Schütze, S. Seelecke, P. Motzki, and **G. Rizzello**, “System Simulation of an Elastocaloric Heating and Cooling Device Based on SMA,” in *ASME 2020 Conference on Smart Materials, Adaptive Structures and Intelligent Systems*, 2020, p. V001T03A005 (DOI: 10.1115/SMASIS2020-2262).
- [64.c] S.-M. Kirsch, F. Welsch, D. Bevilacqua, D. Naso, S. Seelecke, **G. Rizzello**, and P. Motzki, “SMA Antagonistic-Micro-Wire-Bundle – First Measurement Results,” in *ASME 2020 Conference on Smart Materials, Adaptive Structures and Intelligent Systems*, 2020, p. V001T02A006 (DOI: 10.1115/SMASIS2020-2261).
- [63.c] J. Prechtl, S. Seelecke, P. Motzki, and **G. Rizzello**, “Self-Sensing Control of Antagonistic SMA Actuators Based on Resistance-Displacement Hysteresis Compensation,” in *ASME 2020 Conference on Smart Materials, Adaptive Structures and Intelligent Systems*, 2020, p. V001T03A001 (DOI: 10.1115/SMASIS2020-2224).
- [62.c] N. Michaelis, S.-M. Kirsch, F. Welsch, **G. Rizzello**, S. Seelecke, and P. Motzki, “Investigation of Elastocaloric Air Cooling Potential Based on Superelastic SMA Wire Bundles,” in *ASME 2020 Conference on Smart Materials, Adaptive Structures and Intelligent Systems*, 2020, pp. 1-6.
- [61.c] P. Massenio, **G. Rizzello**, D. Naso, F. Lewis, and A. Davoudi, “Data-Driven Optimal Structured Control for Unknown Symmetric Systems,” in *2020 IEEE 16th International Conference on Automation Science and Engineering (CASE)*, 2020, pp. 179-184 (DOI: 10.1109/CASE48305.2020.9216852).
- [60.c] P. Motzki, S. Seelecke, and **G. Rizzello**, “A Shape Memory Alloy Smart Handling System for Advanced Manufacturing Applications,” in *7th International Conference on Control, Decision and Information Technologies (CoDIT)*, 2020, pp. 229-234 (DOI: 10.1109/CoDIT49905.2020.9263859).
- [59.c] J. Kunze, J. Kunze, **G. Rizzello**, and S. Seelecke, “Design and Fabrication of Silicone-based Dielectric Elastomer Rolled Actuators for Soft Robotic Applications,” in *Electroactive Polymer Actuators and Devices (EAPAD) XXII*, 2020, p. 113752D (DOI: 10.1117/12.2558444).
- [58.c] J. Prechtl, J. Kunze, S. Nalbach, S. Seelecke, and **G. Rizzello**, “Soft Robotic Module Actuated by Silicone-Based Rolled Dielectric Elastomer Actuators - Modeling and Simulation,” in *Electroactive Polymer Actuators and Devices (EAPAD) XXII*, 2020, p. 113752C (DOI: 10.1117/12.2557736).
- [57.c] S. Gratz-Kelly, A. Meyer, P. Motzki, S. Nalbach, **G. Rizzello**, and S. Seelecke, “Force measurement based on dielectric elastomers for an intelligent glove providing worker assessment in the digital production,” in *Electroactive Polymer Actuators and Devices (EAPAD) XXII*, 2020, p. 1137525 (DOI: 10.1117/12.2558442).
- [56.c] A. Meyer, S. Lenz, S. Gratz-Kelly, P. Motzki, S. Nalbach, S. Seelecke, and **G. Rizzello**, “Experimental characterization of a smart dielectric elastomer multi-sensor grid,” in *Electroactive Polymer Actuators and Devices (EAPAD) XXII*, 2020, p. 1137528 (DOI: 10.1117/12.2558433).
- [55.c] D. Bruch, S. Nalbach, **G. Rizzello**, S. Seelecke, and P. Motzki “Multifunctional fatigue testing device for in-plane operating DEAs,” in *Electroactive Polymer Actuators and Devices (EAPAD) XXII*, 2020, p. 113800S (DOI: 10.1117/12.2558609).

- [54.c] P. Scherer, A. Irscheid, **G. Rizzello**, and J. Rudolph “Flatness-based Trajectory-tracking Control of Dielectric Elastomer Actuators,” in *Proc. of 21th World Congress of the International Federation of Automatic Control*, 2020, pp. 8757-8762 (DOI: 10.1016/j.ifacol.2020.12.1371).
- [53.c] M. A. Mandolino, F. Ferrante, and **G. Rizzello**, “A Hybrid Dynamical Model for Hysteretic Thermal Shape Memory Alloy Wire Actuators” in *Proc. of 21th World Congress of the International Federation of Automatic Control*, 2020, pp. 8923-8928 (DOI: 10.1016/j.ifacol.2020.12.1418).
- [52.c] D. Rotondo and **G. Rizzello**, “On the optimization of actuator saturation limits for LTI systems: an LMI-based invariant ellipsoid approach,” in *Proc. of 21th World Congress of the International Federation of Automatic Control*, 2020, pp. 5567-5572 (DOI: 10.1016/j.ifacol.2020.12.1568).
- [51.c] **G. Rizzello**, D. Naso, and S. Seelecke, “Hysteresis modeling in thermal shape memory alloy wire actuators: an irreversible port-Hamiltonian approach,” in *58th IEEE Conference on Decision and Control*, 2019, pp. 7937-7943 (DOI: 10.1109/CDC40024.2019.9030010).
- [50.c] S. Borreggine, V. G. Monopoli, **G. Rizzello**, R. Consoletti, F. Cupertino, and D. Naso, “A Review on Model Predictive Control and its Applications in Power Electronics,” in *AEIT International Conference of Electrical and Electronic Technologies for Automotive*, 2019, pp. 1-6 (DOI: 10.23919/EETA.2019.8804594).
- [49.c] P. Massenio, D. Naso, and **G. Rizzello**, “Energy Optimal Control of Dielectric Elastomer Actuators via Adaptive Dynamic Programming,” in *The 15th IEEE/ASME International Conference on Mechatronic and Embedded Systems and Applications*, 2019, pp. 1-7 (DOI: 10.1115/DETC2019-98156).
- [48.c] P. Massenio, **G. Rizzello**, and D. Naso, “Fuzzy Adaptive Dynamic Programming Minimum Energy Control Of Dielectric Elastomer Actuators,” in *FUZZ-IEEE 2019: International Conference on Fuzzy Systems*, 2019, pp. 1-6 (DOI: 10.1109/FUZZ-IEEE.2019.8858901).
- [47.c] F. Simone, S. Borreggine, **G. Rizzello**, V. Palmisano, D. Naso, and S. Seelecke, “Modeling and Identification of a Shape Memory Alloy Robotic Finger Actuator,” in *European Control Conference (ECC)*, 2019, pp. 1097-1102 (DOI: 10.23919/ECC.2019.8795700).
- [46.c] S. Hau, P. Linnebach, **G. Rizzello**, and S. Seelecke, “A novel design concept to boost the force output of dielectric elastomer membrane actuators,” in *Electroactive Polymer Actuators and Devices (EAPAD) XXI*, 2019, p. 109660N (DOI: 10.1117/12.2514210).
- [45.c] P. Linnebach, S. Hau, **G. Rizzello**, and S. Seelecke, “Design of a Dielectric Elastomer Actuator Driven Pneumatic Pump,” in *Electroactive Polymer Actuators and Devices (EAPAD) XXI*, 2019, p. 109661S (DOI: 10.1117/12.2514034).
- [44.c] P. Loew, **G. Rizzello**, F. Simone, and S. Seelecke, “Finite element simulation of plane strain dielectric elastomer membranes actuated by discretized electrodes,” in *Electroactive Polymer Actuators and Devices (EAPAD) XXI*, 2019, p. 109660W (DOI: 10.1117/12.2513928).
- [43.c] F. Simone, D. Meli, **G. Rizzello**, D. Naso, and S. Seelecke, “Finite element modeling and simulation of a robotic finger actuated by Ni-Ti shape memory alloy wires,” in *Electroactive Polymer Actuators and Devices (EAPAD) XXI*, 2019, p. 109680F (DOI: 10.1117/12.2513919).
- [42.c] L. Agostini, **G. Rizzello**, M. Fontana, R. Vertechy, and S. Seelecke, “Continuum electro-mechanical damage modelling for dielectric elastomer,” in *Electroactive Polymer Actuators and Devices (EAPAD) XXI*, 2019, p. 109660Y (DOI: 10.1117/12.2514107).

- [41.c] F. Simone, **G. Rizzello**, P. Motzki, and S. Seelecke, "Design of a dexterous Finger actuated by SMA bundle wires," in *Technische Unterstützungssysteme, die die Menschen wirklich wollen*, 2018, pp. 1-7.
- [40.c] G. Panaro, **G. Rizzello**, D. Naso, and S. Seelecke, "Position Control of Dielectric Elastomer Actuators Based on Port-Hamiltonian Framework," in *57th IEEE Conference on Decision and Control*, 2018, pp. 6888-6893. (DOI: 10.1109/CDC.2018.8619077)
- [39.c] D. Rotondo, **G. Rizzello**, and D. Naso, "Robust control of systems with output hysteresis and input saturation using a finite time stability approach," in *57th IEEE Conference on Decision and Control*, 2018, pp. 3830-3835. (DOI: 10.1109/CDC.2018.8618885)
- [38.c] P. Linnebach, S. Hau, **G. Rizzello**, P. Motzki, and S. Seelecke, "Stroke Magnification in Dielectric Elastomer Actuators with Dynamic Excitation," in *16th International Conference on New Actuators & 10th Exhibition on Smart Actuators and Drive Systems*, 2018, pp. 1-5.
- [37.c] P. Montegiglio, C. Maruccio, G. Acciani, **G. Rizzello**, and S. Seelecke, "Nonlinear multi-scale dynamics modeling of a piezoelectric energy harvester," in *IEEE EEEIC - 18th International Conference on Environment and Electrical Engineering*, 2018, pp. 1-6 (DOI: 10.1109/EEEIC.2018.8493962).
- [36.c] A. Bonci, S. Longhi, M. Pirani, E. Lorenzoni, **G. Rizzello**, D. Naso, and S. Seelecke, "Simulation Analysis and Performance Evaluation of a Vibratory Feeder Actuated by Dielectric Elastomers," in *The 14th IEEE/ASME International Conference on Mechatronic and Embedded Systems and Application*, 2018, pp. 1-6 (DOI: 10.1109/MESA.2018.8449148).
- [35.c] D. Bruch, S. Hau, P. Loew, **G. Rizzello**, and S. Seelecke, "Fast model-based design of large stroke dielectric elastomer membrane actuators biased with pre-stressed buckled beams," in *Electroactive Polymer Actuators and Devices (EAPAD) XX*, 2018, p. 105940H (DOI: 10.1117/12.2296558).
- [34.c] P. Zanini, **G. Rizzello**, S. Seelecke, J. Rossiter, and M. Homer, "Self-sensing for robust automatic charge management of dielectric elastomer generators," in *Electroactive Polymer Actuators and Devices (EAPAD) XX*, 2018, p. 105941J (DOI: 10.1117/12.2295355).
- [33.c] P. Loew, **G. Rizzello**, and S. Seelecke, "Pressure monitoring inside a polymer tube based on a dielectric elastomer membrane sensor," in *Electroactive Polymer Actuators and Devices (EAPAD) XX*, 2018, p. 105941K (DOI: 10.1117/12.2296332).
- [32.c]* **G. Rizzello**, D. Naso, and S. Seelecke, "Passivity Analysis and Port-Hamiltonian Formulation of the Müller-Achenbach-Seelecke Model for Shape Memory Alloys: the Isothermal Case," in *9th Vienna International Conference on Mathematical Modelling*, 2018, pp. 713-718 (DOI: 10.1016/j.ifacol.2018.03.121).
- [31.c]* **G. Rizzello**, P. Loew, D. Naso, and S. Seelecke, "Analytical Modeling of Clamped Dielectric Elastomer Strip Membranes Exhibiting Necking Effect," in *9th Vienna International Conference on Mathematical Modelling*, 2018, pp. 701-706 (DOI: 10.1016/j.ifacol.2018.03.119).
- [30.c]* **G. Rizzello**, M. Schmidt, S. Seelecke, M. A. Mandolino, and D. Naso, "Modeling and Simulation of a Valve System Actuated by Polycrystalline Shape Memory Alloy Wires," in *IEEE 15th International Workshop on Advanced Motion Control*, 2018, pp. 402-407 (DOI: 10.1109/AMC.2019.8371126).

- [29.c] E. Bongermanino, M. Tomaselli, V. G. Monopoli, **G. Rizzello**, F. Cupertino, and D. Naso, "Hybrid Aeronautical Propulsion: Control and Energy Management," in *Control Conference Africa*, 2017, pp. 169-174 (DOI: 10.1016/j.ifacol.2017.12.031).
- [28.c] **G. Rizzello**, L. Riccardi, D. Naso, B. Turchiano, and S. Seelecke, "An Overview on Innovative Mechatronic Actuators Based on Smart Materials," in *IEEE AFRICON*, 2017, pp. 450-455 (DOI: 10.1109/AFRCON.2017.8095524).
- [27.c]* **G. Rizzello**, D. Naso, and S. Seelecke, "A Thermodynamically Consistent Port-Hamiltonian Model for Dielectric Elastomer Membrane Actuators and Generators," in *Proc. of 20th World Congress of the International Federation of Automatic Control*, 2017, pp. 4855-4862 (DOI: 10.1016/j.ifacol.2017.08.974).
- [26.c] **G. Rizzello**, F. Ferrante, D. Naso, and S. Seelecke, "Interaction Control of a Dielectric Elastomer Membrane with Variable Stiffness," in *American Control Conference (ACC)*, 2017, pp. 210-215 (DOI: 10.23919/ACC.2017.7962955).
- [25.c] S. Nalbach, **G. Rizzello**, and S. Seelecke, "Continuous Vibration Analysis of Dielectric Elastomer Membranes," in *Electroactive Polymer Actuators and Devices (EAPAD)*, 2017, p. 101632A (DOI: 10.1117/12.2258609).
- [24.c] P. Loew, **G. Rizzello**, and S. Seelecke, "Permanent Magnets as Biasing Mechanism for Improving the Performance of Circular Dielectric Elastomer out-of-plane Actuators," in *Electroactive Polymer Actuators and Devices (EAPAD)*, 2017, p. 101630Y (DOI: 10.1117/12.2258390).
- [23.c] M. Hill, **G. Rizzello**, and S. Seelecke, "Development of a Fatigue Testing Setup for Dielectric Elastomer Membrane Actuators," in *Electroactive Polymer Actuators and Devices (EAPAD)*, 2017, p. 101630X (DOI: 10.1117/12.2259867).
- [22.c] F. Simone, P. Linnebach, **G. Rizzello**, and S. Seelecke, "FE Simulation of a Dielectric Elastomer Actuator (DEA) driven Contactor in COMSOL," in *VDI Fachtagung Mechatronik*, 2017, pp. 244-249.
- [21.c] **G. Rizzello**, M. Hodgins, S. Seelecke, and D. Naso, "Self-Sensing at Low Sampling-To-Signal Frequency Ratio: an Improved Algorithm for Dielectric Elastomer Actuators," in *The 12th IEEE/ASME International Conference on Mechatronic and Embedded Systems and Applications*, 2016, p. 7587146 (DOI: 10.1109/MESA.2016.7587146).
- [20.c] M. Hill, **G. Rizzello**, and S. Seelecke, "Development and experimental characterization of a DE membrane actuated valve," in *15th International Conference on New Actuators & 8th Exhibition on Smart Actuators and Drive Systems*, 2016, pp. 510-513.
- [19.c] **G. Rizzello**, D. Naso, A. York, and S. Seelecke, "Self-Sensing Control of a Bi-Stable Dielectric Elastomer Actuator Operating Against a Load," in *4SMARTS, Symposium für Smarte Strukturen und Systeme*, 2016, pp. 360-372.
- [18.c] S. Hau, M. Hodgins, **G. Rizzello**, A. York, and S. Seelecke, "Entwicklung einer durch dielektrische elektroaktive Polymeraktoren (DEAP) angetriebenen Hochgeschwindigkeitsmikropositionierbühne," in *VDI Fachtagung Mechatronik*, 2015, pp. 73-78.
- [17.c]* **G. Rizzello**, D. Naso, B. Turchiano, A. York, and S. Seelecke, "Robust LMI Position Regulation Of A Bistable Dielectric Electro-Active Polymer Membrane," in *54th IEEE Conference on Decision and Control*, 2015, pp. 84-90 (DOI: 10.1109/CDC.2015.7402090).

- [16.c] A. Guagnano, **G. Rizzello**, F. Cupertino, D. and Naso, “Robust Current Control of Electrical Machines Considering Saturation Effects at High Speed Regimes,” in *IEEE 24th International Symposium on Industrial Electronics (ISIE)*, 2015, pp. 536-541 (DOI: 10.1109/ISIE.2015.7281524).
- [15.c] A. Guagnano, **G. Rizzello**, F. Cupertino, and D. Naso, “Robust Control of High-Speed Synchronous Reluctance Machines,” in *IEEE Energy Conversion Congress & Expo*, 2015, pp. 2223-2230 (DOI: 10.1109/ECCE.2015.7309973).
- [14.c] **G. Rizzello**, D. di Leo, D. Naso, A. York, and S. Seelecke, “LMI Based Mixed $\mathcal{H}_2/\mathcal{H}_\infty$ Control of a Bi-Stable Dielectric ElectroActive Polymer Actuator,” in *10th Asian Control Conference*, 2015, pp. 1-6.
- [13.c]* **G. Rizzello**, D. Naso, B. Turchiano, A. York, and S. Seelecke, “LMI-based Design of PI Controllers for Micropositioning dielectric Electro-Active Polymer membranes,” in *American Control Conference (ACC)*, 2015, pp. 5509-5514 (DOI: 10.1109/ACC.2015.7172201).
- [12.c] **G. Rizzello**, D. Naso, A. York, and S. Seelecke, “Self-Sensing in Dielectric Electro-Active Polymer Actuator Using Linear-In-Parameters Online Estimation,” in *IEEE International Conference on Mechatronics (ICM)*, 2015, pp. 300-306 (DOI: 10.1109/ICMECH.2015.7083992).
- [11.c] G. Binetti, H. Janocha, G. Leonetti, D. Naso, L. Riccardi, **G. Rizzello**, and S. Seelecke, “Modelling and Control of Innovative Smart Materials and Actuators,” in *1st WORKSHOP on the State of the art and Challenges Of Research Efforts @POLIBA*, 2014, pp. 1-4.
- [10.c] **G. Rizzello**, “Modeling and Control of Bi-Stable Dielectric ElectroActive Polymer Actuators,” in *1st WORKSHOP on the State of the art and Challenges Of Research Efforts @POLIBA*, 2014, pp. 1-4.
- [9.c]* L. Riccardi, **G. Rizzello**, D. Naso, B. Holz, S. Seelecke, H. Janocha, and B. Turchiano, “Modeling and control of innovative smart materials and actuators: A tutorial,” in *2014 IEEE Conference on Control Applications (CCA)*, 2014, pp. 965–977 (DOI: 10.1109/CCA.2014.6981461).
- [8.c] M. Hodgins, **G. Rizzello**, A. York, and S. Seelecke, “Experimental Analysis and Validation of a Circular Dielectric ElectroActive Polymer Actuator Operating Against Various Loading Conditions,” in *ASME 2014 Conference on Smart Materials, Adaptive Structures and Intelligent Systems*, 2014, p. V002T02A011 (DOI: 10.1115/SMASIS2014-7616).
- [7.c] **G. Rizzello**, M. Hodgins, D. Naso, A. York, and S. Seelecke, “Dynamic Electromechanical Modeling of a Spring-Biased Dielectric Electroactive Polymer Actuator System,” in *ASME 2014 Conference on Smart Materials, Adaptive Structures and Intelligent Systems*, 2014, p. V002T02A012 (DOI: 10.1115/SMASIS2014-7617).
- [6.c] M. Hodgins, **G. Rizzello**, A. York, D. Naso, and S. Seelecke, “Modeling of Actuator System Based on a Dielectric Electro-active Polymer Circular Membrane when Operating Against a Constant Loading Force,” in *14th International Conference on New Actuators & 8th Exhibition on Smart Actuators and Drive Systems*, 2014, pp. 1-4.
- [5.c]* **G. Rizzello**, D. Naso, A. York, and S. Seelecke, “Model-based PID control of a dielectric electro-active polymer positioning system,” in *Proc. of 19th World Congress of the International Federation of Automatic Control*, 2014, pp. 10926–10933 (DOI: 10.3182/20140824-6-ZA-1003.01509).
- [4.c]* M. Hodgins, **G. Rizzello**, A. York, and S. Seelecke, “High-Frequency Dynamic Model of a Pre-Loaded Circular Dielectric Electro-Active Polymer Actuator,” in *ASME 2013 Conference on Smart Materials, Adaptive Structures and Intelligent Systems*, 2013, p. V002T02A020 (DOI: 10.1115/SMASIS2013-3259).

- [3.c]* **G. Rizzello**, D. Naso, A. York, and S. Seelecke, “Modeling and Position Control of an Electromechanical Actuator Based on a Mass-Spring-Biased EAP System,” in *18th IEEE International Conference on Emerging Technologies and Factory Automation*, 2013, pp. 1-8 (DOI: 10.1109/ETFA.2013.6648039).
- [2.c]* **G. Rizzello**, D. Naso, A. York, and S. Seelecke, “Modeling, Experimental Identification and Position Control of an Annular Dielectric Elastomer Actuator Biased with a Mass,” in *6th ECCOMAS Conference on Smart Structures and Materials*, 2013, pp. 1-19.
- [1.c] **G. Rizzello**, D. Naso, and S. Seelecke, “A Nonlinear Electro-Mechanical Model for an Annular Dielectric Elastomer Actuator with a Biasing Mass,” in *VDI Fachtagung Mechatronik*, 2013, pp. 117-122.

Contributions in Books and E-Books

- [2.b] **G. Rizzello** and P. Motzki, “Chapter 6 – Smart materials for mini-actuators”, in *Endorobotics*, L. Manfredi, Ed. Academic Press, 2022, pp. 117-163 (DOI: 10.1016/B978-0-12-821750-4.00006-2).
- [1.b] G. Gu, H. Shea, S. Seelecke, G. Alici, and **G. Rizzello**, *Soft Robotics based on Electroactive Polymers*, e-book, Lausanne: Frontiers Media SA, 2021 (DOI: 10.3389/978-2-88966-935-6).

Patents

- [1.p] G. Moretti, S. Gratz-Kelly, M. Fontana, P. Motzki, **G. Rizzello**, and S. Seelecke, “Audio-tactile transducer device based on dielectric electro-active elastomers”, US2023262396A1, Aug. 2023.

I hereby authorize the processing of my personal data in conformity with Italian D.Lgs. 196/2003.

September 15, 2023