

Shai Revzen

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Education

- 2020 **J.D.**, *Wayne State Univ.*, Detroit.
(exp. 2025) Law
- 2003 **Ph.D.**, *Univ. California*, Berkeley.
Dec 2009 Integrative Biology
- 1994 **M.Sc.**, *Hebrew Univ.*, Jerusalem.
Jun 2002 Computer Science (Optimization)
- 1989 **B.Sc.**, *Hebrew Univ.*, Jerusalem, *Magna cum laude*.
May 1993 Degree from honours program; Majors Computer Science, Math (extended); Minor Physics

Doctoral thesis

- title Neuromechanical Control Architectures in Arthropod Locomotion
supervisor Robert J. Full

Master thesis

- title Paging on Access Graphs of Minimal Degree 3
supervisor Nati Linial

Work Experience

Academia

- 19–now **Associate Professor**, *U. Michigan (Electrical Engineering & Computer Science)*, Ann Arbor.
Research, student supervision, teaching; robotics and control theory
- 19–now **Associate Professor**, *U. Michigan (Ecology and Evolutionary Biology)*, Ann Arbor.
Research, student supervision, teaching; biomechanics and mathematical biology
- 22–now **Visiting Associate Professor**, *Technion (Mechanical Engineering)*, Haifa, ISRAEL.
Research, student supervision, teaching; biomechanics and robotics
- 12–19 **Assistant Professor**, *U. Michigan (Ecology and Evolutionary Biology)*, Ann Arbor.
Research, student supervision, teaching; biomechanics and mathematical biology
- 12–19 **Assistant Professor**, *U. Michigan (Electrical Engineering & Computer Science)*, Ann Arbor.
Research, student supervision, teaching; robotics and control theory

- 11–12 **Visiting Assistant Professor**, *U. Michigan (Electrical Engineering & Computer Science)*.
- 09–12 **Postdoctoral Research Associate**, *U. Pennsylvania*, Philadelphia.
Research, student supervision; robotics and control theory
Advisors Mark Yim, Daniel E. Koditschek and George Pappas
- 06–09 **Graduate Student Researcher**, *U. California*, Berkeley.
Funded Ph.D. research; biomechanics

Tech Industry

- 19–now **General Manager**, *Izun, Inc.*, Pittsfield, MI USA.
Technology Consulting and Education
- 22–now **Chief Science Officer**, *Acculine Medical*, Petach Tiqva, ISRAEL.
Biomedical Diagnostic Device start-up
- 03–22 **Founding partner**, *Bio-Signal Analysis*, Tel-Aviv, ISRAEL.
Technology start-up
- 01–06 **Chief Architect, R&D**, *Harmonic, Inc.*, Sunnyvale, CA, USA.
R&D, embedded programming, algorithms; Company develops digital video equipment for cable and satellite
- 98–01 **Chief Architect**, *Harmonic Data, Ltd.*, Tel-Aviv, ISRAEL.
Company-wide system architecture, basic research team manager, academic liaison; Company develops Internet over satellite solutions
- 96–98 **Instructor**, *John Bryce Training*, Ramat-Gan, ISRAEL.
Teaching Java, Javascript, HTML; Company trains IT professionals
- 97 **Software Engineer**, *Compedia, Ltd*, Ramat-Gan, ISRAEL.
Design and development of 3D video game engine; Company develops edutainment products for kids

Military Service (Israel)

- 96–01 **Reserve duty**, *IDF*.
- 93–96 **Mandatory service**, *IDF*.

Peer-Reviewed Publications

- [W24] **S Revzen** and Ziyou Wu. “In-situ calibration of six-axis force/torque transducers on a six-legged robot”. In: *ASME J Dynamic Systems, Measurement and Control* 147 (2024), pp. 031003-1–9. DOI: [10.1115/1.4066455](https://doi.org/10.1115/1.4066455).
- [WZ24] Ziyou Wu, Dan Zhao, and **S Revzen**. “Modeling multi-legged robot locomotion with slipping and its experimental validation”. In: *IEEE International Journal of Robotics Research* (2024). DOI: [10.1177/02783649241263114](https://doi.org/10.1177/02783649241263114).
- [23a] **S Revzen**. “Contract Drafting, Programming Languages, and What They Can Teach Each Other”. In: *Wayne St. UJ Bus. L.* 6 (2023), p. 64. URL: [\[LINK\]](#).
- [CB22] George Council, **S Revzen**, and Samuel A Burden. “Representing and computing the b-derivative of the piecewise-differentiable flow of a class of nonsmooth vector fields”. In: *Journal of Computational and Nonlinear Dynamics* 17.9 (2022), p. 091004. DOI: [10.1115/1.4054481](https://doi.org/10.1115/1.4054481).
- [Zha+22] D Zhao, B A Bittner, G Clifton, N Gravish, and **S Revzen**. “Walking is like slithering: A unifying, data-driven view of locomotion”. In: *Proceedings of the National Academy of Science* 119.37 (2022), e2113222119. DOI: [10.1073/pnas.2113222119](https://doi.org/10.1073/pnas.2113222119).
- [K21] Matthew D Kvalheim and **S Revzen**. “Existence and uniqueness of global Koopman eigenfunctions for stable fixed points and periodic orbits”. In: *Physica D: Nonlinear Phenomena* 425 (2021), p. 132959. DOI: [10.1016/j.physd.2021.132959](https://doi.org/10.1016/j.physd.2021.132959).
- [KH21] Matthew D Kvalheim, David Hong, and **S Revzen**. “Generic properties of Koopman eigenfunctions for stable fixed points and periodic orbits”. In: *IFAC-PapersOnLine* 54.9 (2021), pp. 267–272. DOI: [10.1016/j.ifacol.2021.06.150](https://doi.org/10.1016/j.ifacol.2021.06.150).
- [WB21a] Z Wu, S L Brunton, and **S Revzen**. “Challenges in Dynamic Mode Decomposition”. In: *J of The Royal Society Interface* 18 (2021), p. 20210686. DOI: [10.1098/rsif.2021.0686](https://doi.org/10.1098/rsif.2021.0686).
- [BH20a] B Bittner, R L Hatton, and **S Revzen**. “Data-Driven Geometric System Identification for Shape-Underactuated Dissipative Systems”. In: *Bioinspiration and Biomimetics* 17 (2020), p. 026004. DOI: [10.1088/1748-3190/ac3b9c](https://doi.org/10.1088/1748-3190/ac3b9c).
- [Z20] D Zhao and **S Revzen**. “Multi-legged steering and slipping with low DoF hexapod robots”. In: *Bioinspiration and Biomimetics* 15.4 (2020), p. 045001. DOI: [10.1088/1748-3190/ab84c0](https://doi.org/10.1088/1748-3190/ab84c0).
- [KB19a] M Kvalheim, B Bittner, and **S Revzen**. “Gait modeling and optimization for the perturbed Stokes regime”. In: *J Nonlinear Dynamics* (2019). DOI: [10.1007/s11071-019-05121-3](https://doi.org/10.1007/s11071-019-05121-3).
- [WZ19] Ziyou Wu, Dan Zhao, and **S Revzen**. “Coulomb Friction Crawling Model Yields Linear Force–Velocity Profile”. In: *J Applied Mechanics* 86.5 (2019). DOI: [10.1115/1.4042696](https://doi.org/10.1115/1.4042696).
- [BH18] B A Bittner, R A Hatton, and **S Revzen**. “Geometrically Optimal Gaits: a Data-Driven Approach”. In: *Nonlinear Dynamics* 94.3 (2018), pp. 1933–1948. DOI: [10.1007/s11071-018-4466-9](https://doi.org/10.1007/s11071-018-4466-9).

- [EK18] J Eldering, M Kvalheim, and **S Revzen**. “Global linearization and fiber bundle structure of invariant manifolds”. In: *Nonlinearity* 31.9 (2018). Ed. by Rafael de la Llave, p. 4202. DOI: [10.1088/1361-6544/aaca8d](https://doi.org/10.1088/1361-6544/aaca8d).
- [K17a] **S Revzen** and D E Koditschek. “Why we need more degrees of freedom”. In: *Procedia IUTAM* 20 (2017). 24th International Congress of Theoretical and Applied Mechanics, pp. 89–93. ISSN: 2210-9838. DOI: [10.1016/j.piutam.2017.03.012](https://doi.org/10.1016/j.piutam.2017.03.012).
- [Fit+17] I Fitzner, Y Sun, V Sachdeva, and **S Revzen**. “Rapidly Prototyping Robots: Using Plates and Reinforced Flexures”. In: *IEEE Robotics Automation Magazine* 24.1 (Mar. 2017), pp. 41–47. ISSN: 1070-9932. DOI: [10.1109/MRA.2016.2639058](https://doi.org/10.1109/MRA.2016.2639058).
- [Wil+17a] S Wilshin, G C Haynes, J Porteous, D E Koditschek, **S Revzen**, and A J Spence. “Morphology and the gradient of a symmetric potential predict gait transitions of dogs”. In: *Biological Cybernetics* 111.3 (2017), pp. 269–277. ISSN: 1432-0770. DOI: [10.1007/s00422-017-0721-2](https://doi.org/10.1007/s00422-017-0721-2).
- [Wil+17b] S Wilshin, M A Reeve, G C Haynes, **S Revzen**, D E Koditschek, and A J Spence. “Longitudinal quasi-static stability predicts changes in dog gait on rough terrain”. In: *Journal of Experimental Biology* 220.10 (2017), pp. 1864–1874. ISSN: 0022-0949. DOI: [10.1242/jeb.149112](https://doi.org/10.1242/jeb.149112).
- [Bur+16] S A Burden, S S Sastry, D E Koditschek, and **S Revzen**. “Event-Selected Vector Field Discontinuities Yield Piecewise-Differentiable Flows”. In: *SIAM Journal of Applied Dynamical Systems* 15.2 (2016), pp. 1227–1267. DOI: [10.1137/15M1016588](https://doi.org/10.1137/15M1016588).
- [BS15] S A Burden, **S Revzen**, and S S Sastry. “Model reduction near periodic orbits of hybrid dynamical systems”. In: *IEEE Transactions on Automatic Control* 60.10 (2015), pp. 2626–2639. DOI: [10.1109/TAC.2015.2411971](https://doi.org/10.1109/TAC.2015.2411971).
- [Kas+15] M Kaspari, N A Clay, J A Lucas, **S Revzen**, A D Kay, and S P Yanoviak. “Thermal adaptation and phosphorus shape thermal performance in an assemblage of rainforest ants”. In: *Ecology* 97.4 (2015), pp. 1038–1047. DOI: [10.1890/15-1225.1](https://doi.org/10.1890/15-1225.1).
- [Mau+15] H-M Maus, **S Revzen**, J M Guckenheimer, C Ludwig, J Reger, and A Seyfarth. “Constructing predictive models of human running”. In: *Journal of The Royal Society Interface* 12.103 (2015), p. 2014.0899. DOI: [10.1098/rsif.2014.0899](https://doi.org/10.1098/rsif.2014.0899).
- [+13b] **S Revzen**, S A Burden, T Y Moore, J-M Mongeau, and R J Full. “Instantaneous kinematic phase reflects neuromechanical response to lateral perturbations of running cockroaches”. English. In: *Biological Cybernetics* 107.2 (2013), pp. 179–200. ISSN: 0340-1200. DOI: [10.1007/s00422-012-0545-z](https://doi.org/10.1007/s00422-012-0545-z).
- [G12] **S Revzen** and J M Guckenheimer. “Finding the dimension of slow dynamics in a rhythmic system”. In: *Journal of The Royal Society Interface* 9.70 (May 2012), pp. 957–971. DOI: [10.1098/rsif.2011.0431](https://doi.org/10.1098/rsif.2011.0431).
- [SP12] S Sundaram, **S Revzen**, and G Pappas. “Linear iterative strategies to identify and overcome malicious links in wireless networks”. In: *Automatica* 48.11 (Nov. 2012), pp. 2894–2901. DOI: [10.1016/j.automatica.2012.06.072](https://doi.org/10.1016/j.automatica.2012.06.072).
- [BS11] S Burden, **S Revzen**, and S S Sastry. “Dimension reduction near periodic orbits of hybrid systems”. In: *IEEE Conference on Decision and Control and European Control Conference (CDC-ECC)* (2011), pp. 6116–6121. DOI: [10.1109/CDC.2011.6160405](https://doi.org/10.1109/CDC.2011.6160405).

- [Whi+11] P J White, **S Revzen**, C E Thorne, and M Yim. “A general stiffness model for programmable matter and modular robotic structures”. In: *Robotica* 29.01 (2011), pp. 103–121. ISSN: 1469-8668. DOI: [10.1017/S0263574710000743](https://doi.org/10.1017/S0263574710000743).
- [Spe+10] A J Spence, **S Revzen**, J Seipel, C Mullens, and R J Full. “Insects running on elastic surfaces”. In: *Journal of Experimental Biology* 213.11 (2010), pp. 1907–1920. DOI: [10.1242/jeb.042515](https://doi.org/10.1242/jeb.042515).
- [G08b] **S Revzen** and J M Guckenheimer. “Estimating the phase of synchronized oscillators”. In: *Physical Review E* 78.5 (Nov. 2008), p. 051907. DOI: [10.1103/PhysRevE.78.051907](https://doi.org/10.1103/PhysRevE.78.051907).
- [Jus+08] A Jusufi, D I Goldman, **S Revzen**, and R J Full. “Active tails enhance arboreal acrobatics in geckos”. In: *PNAS* 105.11 (2008), pp. 4215–4219. DOI: [10.1073/pnas.0711944105](https://doi.org/10.1073/pnas.0711944105).

Reviewed Conference Papers

- [K15a] **S Revzen** and M Kvalheim. “Data driven models of legged locomotion”. In: *Proc SPIE*. Vol. 9467. 2015, pp. 1–8. DOI: [10.1117/12.2178007](https://doi.org/10.1117/12.2178007).
- [Mil+15] D Miller, I Fitzner, SB Fuller, and **S Revzen**. “Focused Modularity: Rapid Iteration of Design and Fabrication of a Meter-Scale Hexapedal Robot”. In: *Assistive Robotics: Proceedings of the 18th International Conference on CLAWAR 2015*. World Scientific. 2015, pp. 430–438. DOI: [10.1142/9789814725248_0053](https://doi.org/10.1142/9789814725248_0053).
- [CY14] G Council, S Yang, and **S Revzen**. “Deadbeat control with (almost) no sensing in a hybrid model of legged locomotion”. In: *Advanced Mechatronic Systems (ICAMechS), 2014 International Conference on*. IEEE. Aug. 2014, pp. 475–480. DOI: [10.1109/ICAMechS.2014.6911592](https://doi.org/10.1109/ICAMechS.2014.6911592).
- [PY13] M Piccoli, **S Revzen**, and M Yim. “SEAL Pack: Versatile, Portable, and Rapidly Deployable SEa, Air, and Land Vehicle”. In: *IEEE International Symposium on Safety Security and Rescue Robotics*. Oct. 2013, pp. 1–6. DOI: [10.1109/SSRR.2013.6719362](https://doi.org/10.1109/SSRR.2013.6719362).
- [IK12] **S Revzen**, B D Ilhan, and D E Koditschek. “Dynamical trajectory replanning for uncertain environments”. In: *IEEE Conference on Decision and Control*. 2012, pp. 3476–3483. DOI: [10.1109/CDC.2012.6425897](https://doi.org/10.1109/CDC.2012.6425897).
- [+11] **S Revzen**, M Bhoite, J A Macasieb, and M Yim. “Structure synthesis on-the-fly in a modular robot”. In: *IEEE International Conference on Intelligent Robots and Systems (IROS)*. IEEE/RSJ. 2011, pp. 4797–4802. DOI: [10.1109/IROS.2011.6094575](https://doi.org/10.1109/IROS.2011.6094575).
- [BS11] S Burden, **S Revzen**, and S S Sastry. “Dimension reduction near periodic orbits of hybrid systems”. In: *IEEE Conference on Decision and Control and European Control Conference (CDC-ECC)* (2011), pp. 6116–6121. DOI: [10.1109/CDC.2011.6160405](https://doi.org/10.1109/CDC.2011.6160405).
- [+10] **S Revzen**, J Sastra, N Eckenstein, and Yim. “CKBot Platform for the ICRA 2010 Planetary Challenge”. In: *Proceedings of IEEE International Conference on Robotics and Automation, Workshop "Modular Robots: The State of the Art"*. IEEE. 2010, pp. 11–12.

Books & Book Chapters

- [K16a] **S Revzen** and M Kvalheim. “Bioinspired Legged Locomotion”. In: ed. by M Sharbafi and A Seyfarth. Elsevier, 2016. Chap. Locomotion as an Oscillator, Chapter 3.5, pp. 97–108. ISBN: 978-0-12-803766-9. DOI: [10.1016/B978-0-12-803766-9.00004-X](https://doi.org/10.1016/B978-0-12-803766-9.00004-X).
- [K16b] M Kvalheim and **S Revzen**. “Bioinspired Legged Locomotion”. In: ed. by M Sharbafi and A Seyfarth. Elsevier, 2016. Chap. Templates and Anchors, Chapter 3.2, pp. 62–78. ISBN: 978-0-12-803766-9. DOI: [10.1016/B978-0-12-803766-9.00004-X](https://doi.org/10.1016/B978-0-12-803766-9.00004-X).
- [W16] P M Wensing and **S Revzen**. “Bioinspired Legged Locomotion”. In: ed. by M Sharbafi and A Seyfarth. Elsevier, 2016. Chap. Template models for control, Chapter 4.5, pp. 240–266. ISBN: 978-0-12-803766-9. DOI: [10.1016/B978-0-12-803766-9.00006-3](https://doi.org/10.1016/B978-0-12-803766-9.00006-3).
- [KF08] **S Revzen**, D E Koditschek, and R J Full. “Progress in motor control - a multidisciplinary perspective”. In: ed. by D Sternad. Springer Science+Business Media, LLC - NY, 2008. Chap. Towards testable neuromechanical control architectures for running, pp. 25–56. DOI: [10.1007/978-0-387-77064-2%5F3](https://doi.org/10.1007/978-0-387-77064-2%5F3).

Preprints / In Review

- [A24] Marion Anderson and **S Revzen**. “Rapid Integrator for a Class of Multi-Contact Systems”. 2024. arXiv: [2402.00279](https://arxiv.org/abs/2402.00279). URL: [\[LINK\]](#).
- [WZ23] Ziyou Wu, Dan Zhao, and **S Revzen**. “Modeling multi-legged robot locomotion with slipping and its experimental validation”. 2023. arXiv: [2310.20669](https://arxiv.org/abs/2310.20669). URL: [\[LINK\]](#).
- [C22] George Council and **S Revzen**. “Recovery of Behaviors Encoded via Bilateral Constraints”. This is v3 of the document; first version published 2020. 2022. arXiv: [2005.00506](https://arxiv.org/abs/2005.00506). URL: [\[LINK\]](#).
- [Wil+22] Simon Wilshin, Matthew D Kvalheim, Clayton Scott, and **S Revzen**. “Estimating Phase from Observed Trajectories Using the Temporal 1-Form”. 2022. arXiv: [2203.04498](https://arxiv.org/abs/2203.04498). URL: [\[LINK\]](#).
- [B21] Brian Bittner and **S Revzen**. “Optimizing Gait Libraries via a Coverage Metric”. 2021. arXiv: [2107.08775](https://arxiv.org/abs/2107.08775). URL: [\[LINK\]](#).
- [G21] Sandilya Sai Garimella and **S Revzen**. “Dandelion-Picking Legged Robot”. 2021. arXiv: [2112.05383](https://arxiv.org/abs/2112.05383). URL: [\[LINK\]](#).
- [WK21] Simon Wilshin, Matthew D Kvalheim, and **S Revzen**. “Phase Response Curves and the Role of Coordinates”. IN PRINT: BIOLOGICAL CYBERNETICS. 2021. arXiv: [2111.06511](https://arxiv.org/abs/2111.06511). URL: [\[LINK\]](#).
- [BH20b] B Bittner, R L Hatton, and **S Revzen**. “Data-Driven Geometric System Identification for Shape-Underactuated Dissipative Systems”. 2020. arXiv: [2012.11064](https://arxiv.org/abs/2012.11064). URL: [\[LINK\]](#).
- [KH20] M D Kvalheim, D Hong, and **S Revzen**. “Generic Properties of Koopman Eigenfunctions for Stable Fixed Points and Periodic Orbits”. 2020. arXiv: [2010.04008](https://arxiv.org/abs/2010.04008). URL: [\[LINK\]](#).

- [K19c] Matthew D Kvalheim and **S Revzen**. “Existence and uniqueness of global Koopman eigenfunctions for stable fixed points and periodic orbits”. 2019. arXiv: [1911.11996](#). URL: [\[LINK\]](#).
- [KB19c] Matthew D Kvalheim, Brian Bittner, and **S Revzen**. “Gait modeling and optimization for the perturbed Stokes regime”. 2019. DOI: [10.48550/arXiv.1906.04384](#). arXiv: [1906.04384](#).
- [B B18a] **S Revzen** B Bittner R Hatton. “A Data-Driven Approach to Connection Modeling”. 2018. arXiv: [1801.08190](#). URL: [\[LINK\]](#).
- [B16] **S Revzen** and S A Burden. “Computing the Bouligand derivative of a class of piecewise-differentiable flows”. 2016. arXiv: [1612.02763](#). URL: [\[LINK\]](#).
- [K16c] Matthew Kvalheim and **S Revzen**. “Reverse-engineering invariant manifolds with asymptotic phase”. 2016. arXiv: [1608.08442](#). URL: [\[LINK\]](#).
- [Bur+14] S A Burden, S S Sastry, D E Koditschek, and **S Revzen**. “Event-selected vector field discontinuities yield piecewise-differentiable flows”. 2014. arXiv: [1407.1775](#). URL: [\[LINK\]](#).
- [BS13b] S A Burden, **S Revzen**, and S S Sastry. “Model reduction near periodic orbits of hybrid dynamical systems”. English. 2013. arXiv: [1308.4158](#). URL: [\[LINK\]](#).

Datasets / Code

- [BIR21a] BIRDS-Lab. *BigAnt v6 robot motion tracking data - processed dataset*. Aug. 2021. DOI: [10.7302/jh82-fh69](#).
- [BIR21b] BIRDS-Lab. *BigAnt v6 robot motion tracking data - RAW dataset*. Aug. 2021. DOI: [10.7302/024q-kk06](#).
- [BIR21c] BIRDS-Lab. *BIRDS Lab Multipod robot motion tracking data - processed data and code*. Oct. 2021. DOI: [10.7302/0fpj-dz57](#).
- [BIR21d] BIRDS-Lab. *BIRDS Lab Multipod robot motion tracking data - RAW dataset*. Oct. 2021. DOI: [10.7302/m05a-0d90](#).
- [BIR21e] BIRDS-Lab. *BIRDS Lab Multipod robot motion tracking data - videos*. Oct. 2021. DOI: [10.7302/1y3q-1b42](#).
- [BIR21f] BIRDS-Lab. *Walking Like a Worm : dataset and figures*. Aug. 2021. DOI: [10.7302/gqk6-3x41](#).
- [WB21b] Ziyou Wu, S L Brunton, and **S Revzen**. *Challenges in Dynamic Mode Decomposition – figures*. Aug. 2021. DOI: [10.7302/nzq9-4715](#).

Conference Presentations / Posters

- [K24] Katelyn King and **S Revzen**. “Self-Righting Shell for Robotic Hexapod”. In: *2024 IEEE International Conference on Robotics and Automation (ICRA)*. IEEE, May 2024, pp. 1436–1442. DOI: [10.1109/icra57147.2024.10610914](https://doi.org/10.1109/icra57147.2024.10610914).
- [ZG24] Yishun Zhou, Eleni Gourgou, and **S Revzen**. “Higher Kinematic Phase Variation in Nematodes than in Cockroaches Implies CPG’s Role as a State Estimator”. In: *Integrative and comparative biology*. (poster). 2024.
- [W23b] Ziyou Wu and **S Revzen**. “Connection-Based Data-Driven Gait Modeling of a Quadruped”. In: *APS March Meeting Abstracts*. Vol. 2023. APS, 2023, W10–009.
- [A22] Marion Anderson and **S Revzen**. “Simultaneous Leg Impacts Lead to a Differentiable Flow”. In: *APS March Meeting Abstracts*. Vol. 2022. 2022, W03–007.
- [DW22] Advait Deshpande, Ziyou Wu, and **S Revzen**. “Accelerating multi-contact modeling using a GPU”. In: *APS March Meeting Abstracts*. Vol. 2022. 2022, W03–011.
- [W22] Ziyou Wu and **S Revzen**. “Why does a viscous friction ansatz give accurate multi-contact coulomb friction predictions”. In: *APS March Meeting Abstracts*. Vol. 2022. 2022, W03–002.
- [CB21] **S Revzen**, G Council, and S Burden. “Computing multi-contact collisions (much!) faster”. In: *American Control Conference*. Ed. by J Pusey, Yan Gu, and Ye Zhao. IEEE American Control Conference. 2021. URL: [\[LINK\]](#).
- [+21a] **S Revzen**, D Zhao, B Bittner, G Clifton, and N Gravish. “Bridging Walking and Slithering - Stokesian Locomotion”. In: *Dynamic Walking*. extended abstract and poster. Dynamic Walking. 2021. DOI: [10.7302/4322](https://doi.org/10.7302/4322).
- [+21b] **S Revzen**, D Zhao, B Bittner, G Clifton, and N Gravish. “Constant speed gaits should work across all speeds”. In: *Dynamic Walking*. extended abstract and poster. Dynamic Walking. 2021. DOI: [10.7302/4323](https://doi.org/10.7302/4323).
- [Bit+20] Brian Bittner, Glenna Clifton, Dan Zhao, Nick Gravish, and **S Revzen**. “Ants Behaviors Exhibit Stokesian Qualities”. In: *IROS (Workshop)*. IEEE. June 2020.
- [C20] George Council and **S Revzen**. “Recovery of Behaviors of Robots without Dynamics”. In: American Physical Society, 2020. URL: [\[LINK\]](#).
- [M A20] **S Revzen** M Anderson T McLaughlin. “Serial Elastic versus Parallel Elastic Actuators in Hopping”. In: *Dynamic Walking*. 513. Dynamic Walking. Internet, June 2020. URL: [\[LINK\]](#).
- [MA20] Taylor McLaughlin, Marion Anderson, and **S Revzen**. “Hopping with Elastic Restitution Is More Difficult Than It Seems”. In: American Physical Society, 2020. URL: [\[LINK\]](#).
- [Sar+20] A Sarin, D Abbot, **S Revzen**, and A-T Avestruz. “Bidirectional Capacitive Wireless Power Transfer for Energy Balancing in Modular Robots”. In: *Applied Power Electronics Conference and Exposition*. IEEE, 2020, pp. 852–859. DOI: [10.1109/APEC39645.2020.9124139](https://doi.org/10.1109/APEC39645.2020.9124139).
- [19b] **S Revzen**. “Moving with more legs is different: a geometric mechanics perspective”. In: *Integrative and comparative biology*. Vol. 59. 2019, E191–E191.
- [19c] **S Revzen**. “Moving with more legs is different: a geometric mechanics perspective”. In: *Integrative and comparative biology*. Vol. 59. 2019, E191–E191.

- [CK19] **S Revzen**, G Council, and M Kvalheim. “Is Legged Locomotion Almost Smooth?” In: *Dynamic Walking*. 446. Dynamic Walking. Canmore AB, CA, June 2019. URL: [\[LINK\]](#).
- [W19] **S Revzen** and Ziyou Wu. “Viscous friction-like relationship arises from a simple Columb friction locomotion model”. In: *APS Meeting Abstracts*. 2019. URL: [\[LINK\]](#).
- [B19] B Bittner and **S Revzen**. “Optimizing Gaits for Coverage on Lie Groups”. In: *Dynamic Walking*. Dynamic Walking. June 2019. URL: [\[LINK\]](#).
- [C19a] G Council and **S Revzen**. “Energy and Phased Based Movement Recovery”. In: *2019 SIAM Conference on Dynamical Systems*. SIAM. Snowbird, UT, 2019. URL: [\[LINK\]](#).
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Other Products & Talks

- [24] **S Revzen**. *Why do periodic gaits exist?* talk. seminar recording. June 2024.
- [23b] **S Revzen**. *Ground Robots for Space Exploration: the case for in-situ built robots*. talk. June 2023.
- [23c] **S Revzen**. *New insights into the multi-legged locomotion of animals and robots*. talk. Mar. 2023.
- [W23a] **S Revzen** and Ziyou Wu. *In-situ calibration of six-axis force/torque transducers on legged robot*. Tech. rep. University of Michigan, 2023. DOI: [10.7302/7633](#).

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- [20b] **S Revzen**. *How the physics of slithering can teach multilegged robots to walk*. talk. Sept. 2020. URL: [\[LINK\]](#).
- [20c] **S Revzen**. *Kahn Autonomous Systems Mega-Project Annual Meeting (organizer)*. talk. Dec. 2020. URL: [\[LINK\]](#).
- [20d] **S Revzen**. *Recovering from robot failures by very fast learning*. talk. Nov. 2020. URL: [\[LINK\]](#).
- [20e] **S Revzen**. *Two approaches to make robots robustly recover from failure*. University of Washington Mechanical Engineering Seminar. Jan. 2020.
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- [16b] **S Revzen**. (*invited presentation ONR workshop*). ONR workshop on Distributed Sensing, Actuation, and Control for Bioinspired Soft Robotics. Oct. 2016.
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