Origami-Related Publications

Compliant Mechanisms Research Group (CMR), BYU

January 2016

Origami-related book contributions recently published

Edmondson, B.J., Lang, R.J., Morgan, M.R., Magleby, S.P., Howell, L.L., "Thick Rigidly Foldable Structures Realized by an Offset Panel Technique," *Origami 6*, American Mathematical Society, Vol. 1, pp. 149-161, 2015.

Evans, T.A., Lang, R.J., Magleby, S.P., Howell, L.L., "Rigidly Foldable Origami Twists," *Origami 6*, American Mathematical Society, Vol. 1, pp. 119-130, 2015.

Origami-related journal papers recently published

Nelson, T.G., Lang, R.L., Magleby, S.P., and Howell, L.L., "Curved-Folding-Inspired Deployable Compliant Rolling-contact Element (D-CORE)," *Mechanism and Machine Theory*, Vol. 96, pp. 225-238, DOI:10.1016/j.mechmachtheory.2015.05.017, 2016.

Yellowhorse, A., Howell, L.L., "Creating Rigid Foldability to Enable Mobility of Origami-Inspired Mechanisms," ASME *Journal of Mechanisms and Robotics*, Vol. 8, No. 1, 011011-1, DOI:10.1115/1.4029923, 2016.

Delimont, I.L., Magleby, S.P., Howell, L.L., "A Family of Dual-Segment Compliant Joints Suitable for Use as Surrogate Folds," ASME *Journal of Mechanical Design*, Vol 137, No. 9, 092302-092302-9, doi: 10.1115/1.4030875, 2015.

Evans, T.A., Lang, R.J., Magleby, S.P., Howell, L.L., "Rigidly Foldable Origami Gadgets and Tessellations," *Royal Society Open Science*, Vol. 2, 150067, DOI: 10.1098/rsos.150067, 2015.

Hanna, B.H., Magleby, S.P., Lang, R.J., and Howell, L.L., "Force-deflection Modeling for Generalized Origami Waterbomb-Base Mechanisms," ASME *Journal of Applied Mechanics*, Vol. 82, 081001-1, DOI: 10.1115/1.4030659, 2015.

Delimont, I.L., Magleby, S.P., Howell, L.L., "Evaluating Compliant Hinge Geometries for Origami-Inspired Mechanisms," ASME *Journal of Mechanisms and Robotics*, Vol. 7, No. 1, paper 011009 (8 pages), DOI: 10.1115/1.4029325, 2015.

Hanna, B.H., Lund, J.N., Lang, R.J., Magleby, S.P., Howell, L.L., "Waterbomb Base: A Symmetric Single-Vertex Bistable Origami Mechanism," *Smart Materials and Structures*, Vol. 23, paper no. 094009, doi:10.1088/0964-1726/23/9/094009, 2014.

Tolman, S.S., Delimont, I.A., Howell, L.L., Fullwood, D.T., "Material Selection for Elastic Energy Absorption in Origami-Inspired Compliant Corrugations," *Smart Materials and Structures*, Vol. 23, paper no. 094010, doi:10.1088/0964-1726/23/9/094010, 2014.

Bowen, L.A., Baxter, W.L., Magleby, S.P., Howell, L.L., "A Position Analysis of Coupled Spherical Mechanisms in Action Origami," *Mechanism and Machine Theory*, Vol. 77, pp. 13-24, DOI: 10.1016/j.mechmachtheory.2014.02.006, 2014.

Aten, Q.T., Jensen, B.D., Burnett, S.H., Howell, L.L., "A Self-reconfiguring Metamorphic Nanoinjector for Injection into Mouse Zygotes," *Review of Scientific Instruments*, Vol. 85, 055005; doi: 10.1063/1.4872077, 2014.

Bowen, L.A., Grames, C.L., Magleby, S.P., Lang, R.J., Howell, L.L., "An Approach for Understanding Action Origami as Kinematic Mechanisms," *Journal of Mechanical Design*, Vol. 135, paper no. 111008, DOI: 10.1115/1.4025379, 2013.

Zirbel, S.A., Lang, R.J., Magleby, S.P., Thomson, M.W., Sigel, D.A., Walkemeyer, P.E., Trease, B.P., Howell, L.L., "Accommodating Thickness in Origami-Based Deployable Arrays," *Journal of Mechanical Design*, Vol. 135, paper no. 111005, DOI: 10.1115/1.4025372, 2013.

Merriam, E.G., Jones, J.E., Magleby, S.P., and Howell, L.L., "Monolithic 2 DOF Fully Compliant Space Pointing Mechanism," *Mechanical Sciences*, doi:10.5194/ms-4-381-2013, V. 4, pp. 381-390, 2013.

Francis, K.C., Blanch, J.E., Magleby, S.P., and Howell, L.L., "Origami-like Creases in Sheet Materials for Compliant Mechanism Design," *Mechanical Sciences*, doi:10.5194/ms-4-371-2013, Vol. 4, pp. 371-380, 2013.

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Wilding, S.E., Howell, L.L., and Magleby, S.P., "Spherical Lamina Emergent Mechanisms," *Mechanism and Machine Theory*, DOI: 10.1016/j.mechmachtheory.2011.10.009, Vol. 49, pp. 187-197, 2012.

Greenberg, H.C., Gong, M.L., Howell, L.L., and Magleby, S.P., "Identifying Links Between Origami and Compliant Mechanisms," *Mechanical Sciences*, doi:10.5194/ms-2-217-2011, *Mechanical Sciences*, Vol. 2, pp. 217-225, 2011.

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Winder, B.G., Magleby, S.P., and Howell, L.L., "Kinematic Representations of Pop-up Paper Mechanisms," *Journal of Mechanisms & Robotics*, Vol. 1, No. 2, 021009-1 to 021009-10, 2009.

Origami-related conference papers published in conference proceedings

Allen, J.T., Magleby, S.P., Howell, L.L., "Quantifying and Comparing Surrogate Fold Motions in Thick Sheet Materials," Proceedings of the ASME 2015 Conference on Smart Materials, Adaptive Structures and Intelligent Systems, Denver, CO, Sept 21-23, 2015, SMASIS2015-9066.

Morgan, J., Magleby, S.P., Lang, R.J., Howell, L.L., "A Preliminary Process for Understanding Origami-Adapted Design," Proceedings of the ASME International Design Engineering Technical Conferences, Boston, MA, Aug 2-5, 2015, DETC2015-47559.

Wilcox, E.W., Shrager, A., Bowen, L., Frecker, M., von Lockette, P., Simpson, T., Magleby, S.P., Lang, R.J., Howell, L.L., "Considering Mechanical Advantage in the Design and Actuation of an Origami-Based Mechanisms," Proceedings of the ASME International Design Engineering Technical Conferences, Boston, MA, Aug 2-5, 2015, DETC2015-47708.

Nelson, T.G., Lang, R.L., Magleby, S.P., Howell, L.L., "Large-Curvature Deployable Developable Structures via Lamina Emergent Arrays," Proceedings of the ASME International Design Engineering Technical Conferences, Boston, MA, Aug 2-5, 2015, DETC2015-46636.

Evans, T.A., Rowberry, B.G., Magleby, S.P., Howell, L.L., "Multistable Behavior of Compliant Kaleidocycles," Proceedings of the ASME International Design Engineering Technical Conferences, Boston, MA, Aug 2-5, 2015, DETC2015-46637.

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Delimont, I.L., Magleby, S.P., Howell, L.L., "Evaluating Compliant Hinge Geometries for Origami-Inspired Mechanisms," *Proceedings of the ASME International Design Engineering Technical Conferences*, Buffalo, NY, Aug 17-20, 2014, DETC2014-34376.

Edmondson, B.J., Lang, R.J., Magleby, S.P., Howell, L.L., "An Offset Panel Technique for Thick Rigidly Foldable Origami," *Proceedings of the ASME International Design Engineering Technical Conferences*, Buffalo, NY, Aug 17-20, 2014, DETC2014-35606.

Francis, K.C., Rupert, L.T., Lang. R.J., Morgan, D.C., Magleby, S.P., and Howell, L.L., "From Crease Pattern to Product: Considerations to Engineering Origami-Adapted Designs," *Proceedings of the ASME International Design Engineering Technical Conferences*, Buffalo, NY, Aug 17-20, 2014, DETC2014-34031.

Edmonson, B.J., Bowen, L.A., Grames, C.L., Magleby, S.P., Howell, L.L., Bateman, T.C., "Oriceps: Origami-Inspired Forceps," *Proceedings of the ASME 2013 Conference on Smart Materials, Adaptive Structures and Intelligent Systems,* Snowbird, UT, Sept 16-18, 2013, SMASIS2013-3299.

Zirbel, S.A., Wilson, M.E., Magleby, S.P., Howell, L.L., "An Origami-Inspired Self-Deployable Array," *Proceedings of the ASME 2013 Conference on Smart Materials, Adaptive Structures and Intelligent Systems,* Snowbird, UT, Sept 16-18, 2013, SMASIS2013-3296.

Origami-related theses and dissertations (available on-line)

Evans, Thomas, "Deployable and Foldable Arrays of Spatial Mechanisms," M.S. thesis, Brigham Young University, April 2015.

Hanna, Brandon, "Modeling and Testing of Bistable Waterbomb Base Configurations," M.S. thesis, Brigham Young University, December 2014.

Zirbel, Shannon, "Compliant Mechanisms for Deployable Space Systems," Ph.D. dissertation, Brigham Young University, December 2014.

Tolman, Sean, "Elastic Energy Absorption via Compliant Corrugations," Ph.D. dissertation, Brigham Young University, August 2014.

Francis, Kevin, "Origami-Based Design for Engineering Applications," M.S. thesis, Brigham Young University, August 2013.

Rowberry, Brett G., "Stability of n=6 Normal and Right-Angled Kaleidocycles under the Influence of Energy Elements," B.S. Honors Thesis, Brigham Young University, 2013.

Wilding, Samuel, "Expanding Lamina Emergent Mechanisms (LEM) Capabilities: Spherical LEMs, LEM Joints, and LEM Applications," M.S. thesis, Brigham Young University, August 2011.