

Abstract Submitted
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Thermally Dependent Behavior of Bimetallic Shells and Comparison to the Wittrick Model MAUREEN SMITH, MOIRA FOSTER, M. J. MOELTER, T. D. GUTIERREZ, N. C. KEIM, N. C. HESTON, Cal Poly, Department of Physics — The build-up of thermal stress in shallow bimetallic shells can result in a rapid transition between concave and convex equilibrium states. Experimental literature is lacking that documents this dynamic transition process. We present here our research which documents the thermally dependent shape of bimetallic shells, and the resulting hysteresis cycle. Additional work shows that thermal treatments can be used to shift the hysteresis cycle. We also share the results of our high speed photography in which weve captured for the first time the dynamic transition process between stable states. To our knowledge, our work provides the first experimental data which can be compared to the Wittrick Model for spherically symmetric bimetallic shells. We observe trends consistent with his predictions.

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