Mono-monostatic bodies: the story of the Gömböc

Gabor Domokos

Department of Mechanics, Materials & Structures
Budapest University of Technology & Economics
Muegyetem rkp. 3, K.II.42
Budapest, 1111
HUNGARY
domokos@iit.bme.hu

Abstract

Russian mathematician V.I. Arnold conjectured that convex, homogeneous bodies with less than four equilibria (also called monomonostatic) may exist. Not only did his conjecture turn out to be true, the newly discovered objects (called "Gömböc", cf. www.gomboc.eu) show various interesting features. Our goal is to give an overview of these findings as well as to present some new results. We will point out that mono-monostatic bodies are neither flat, nor thin, they are not similar to typical objects with more equilibria and they are hard to approximate by polyhedra. Despite these "negative" traits, there seems to be strong indication that these forms appear in Nature due to their special mechanical properties.

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