Presentation 2018

ALΣXANDΣR; CEO SAND BOX GEOMETRY LLC

ON 21ST CENTURY PRINCIPALS of NATURAL PHILOSOPHY; GRAVITY, ATOMS, and CHANGE OF STATE.

Parametric Geometry of Two Central Force Fields and Accompanying Mechanical Energy Curves

Mechanical Energy Curves of Gravity (part 1)

- Page (4-16) Gfield energy curves.

Nuclear Mechanical Shaping Curves (part 2)

- Nuclear **CSDA** (page17)
- Page (17-26) nuclear assembly (parametric construction of an atom)
    - Bond plane atom1 and atom2
    - Electromagnetic bond phenomena
    - Nuclear Gravity Field hook

Nuclear Phase Transition (Latent Heat Thermometer) (page 27 – 33) (part 3)

Web sites and Bibliography pages 36&37

33 pages; 6222 words

Index

Web-sites and bibliography 32-33.

My work is always (TIP). Thinking in Progress!

Always leave room for criticism and change!

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From Wikipedia

https://en.wikipedia.org/wiki/Mathematics

WHAT Is MATHEMATICS

Mathematics (from Greek μάθημα *máthēma*, "knowledge, study, learning") is the study of such topics as quantity,[1] structure,[2] space,[1] and change.[3][4][5] It has no generally accepted definition.[6][7]

Figure 1: Euclid (holding calipers), Greek mathematician, 3rd century BC, as imagined by Raphael in this detail from The School of Athens.[a]

Galileo Galilei (1564–1642) said, "The universe cannot be read until we have learned the language and become familiar with the characters in which it is written. It is written in mathematical language, and the letters are triangles, circles and other geometrical figures, without which means it is humanly impossible to comprehend a single word. Without these, one is wandering about in a dark labyrinth."

Hannes Alfven (1908-1995); Father of Plasma Physics:
https://en.wikipedia.org/wiki/Hannes_Alfv%C3%A9n

"We should remember that there was once a discipline called natural philosophy. Unfortunately, this discipline seems not to exist today. It has been renamed science, but science of today is in danger of losing much of the natural philosophy aspect."

SKILL LEVEL: Essential math tools to explore Gfield Energy Curves.

- Analytic geometry
  - Point slope equation of lines:$\left(y - y_1 = m(x - x_1)\right)$
- Basic geometry of two relative curves:
  - (r) as radius of a circle: $(\mathrm{r} * \cos(t)\,, r * \sin(t))$
  - (p) as initial focal radius of a parabola $\left(\frac{\pi}{2} spin\right)$ curve $\left(\frac{t^2}{-4(p)} + r\right)$
- Pythagorean Theorem
  - Square space: $(x^2 + y^2 = r^2)$
  - Curved space: (page 32)

  $(parabola\ vertex\ radius\ of\ curvature \pm f(r) = focal\ radius).$

  Every parabola vertex radius of curvature is 2(p). Every CSDA has two variables. Event radius (r) for square space and event focal radius for curved space. A CSDA is a plane geometry function where event radius (r) has specific orbit energy $(f(r))$. Since a CSDA maps a central force resultant with respect to spin, we have two energy curves. To determine a focal radius magnitude, use $(-f(r))$ for north energy curve and $(+f(r))$ south energy curve.
- Finally, finding slope of tangent to a curve, the first derivative of calculus.
  - Since a CSDA is a function; the parametric of the independent curve is: $(rcos(t), rsin(t))$. Parametric for dependent curve $\left(t, \frac{t^2}{-4(p)} + r\right)$.

  First derivative for slope comes from the CSDA dependent curve. When using CSDA mechanics I found an algorithm for the first derivative of all parabola curves$\left(\frac{-t}{2(p)}\right)$;which become slope (m) in a point slope equation for tangents @ curves.
- Concept of curvature and radius of curvature

  CSDA curvature has specific residence, all curvature numbers $\left(\frac{1}{r}\right)$ are members of micro-infinity and reside totally and completely within the CSDA independent curve (circle). Open space macro-infinity defines radius of curvature. Both infinities are separate from each other by boundary of the independent curve:

$\left(curvature = \left(\frac{1}{r}\right)\ and\ \left(\frac{1}{r}\right)^{-1} = r\right)$ and $\left(radius\ of\ curvature = (r)\ and\ (r)^{-1} = \frac{1}{r}\right)$

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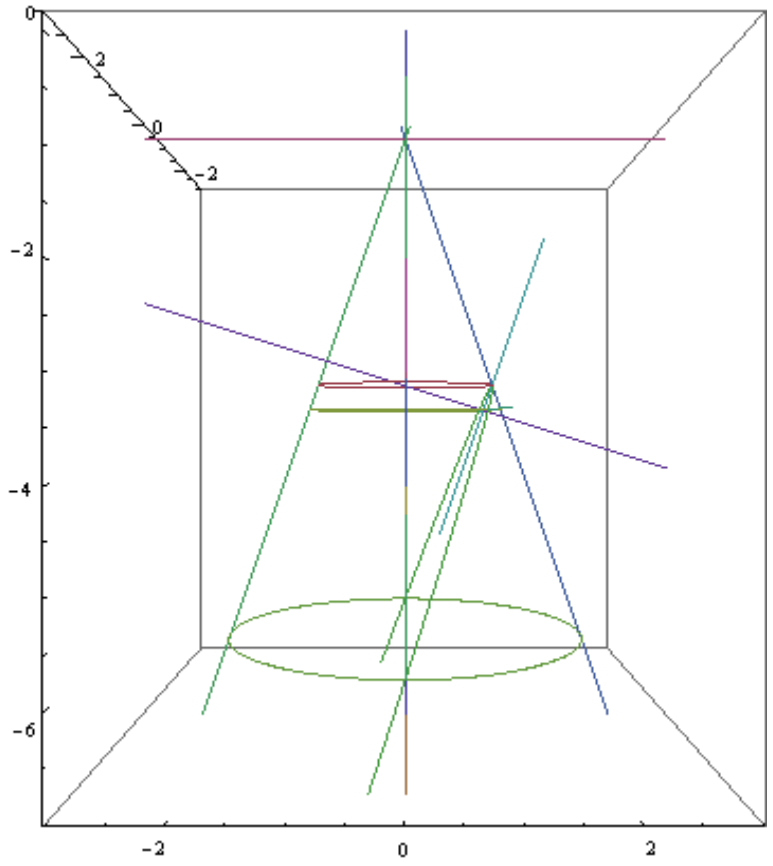
Sand Box Geometry LLC, a company dedicated to utility of Ancient Greek Geometry in pursuing exploration and discovery of Central Force Field Curves.

Using computer parametric geometry code to construct the focus of an Apollonian parabola section within a right cone.



"It is remarkable that the directrix does not appear at all in Apollonius great treatise on conics. The focal properties of the central conics are given by Apollonius, but the foci are obtained in a different way, without any reference to the directrix; the focus of the parabola does not appear at all... Sir Thomas Heath: "A HISTORY OF GREEK MATHEMATICS" page 119, book II.

The computer is my sandbox, the unit circle my compass, and the focal radius of the unit parabola my straight edge.

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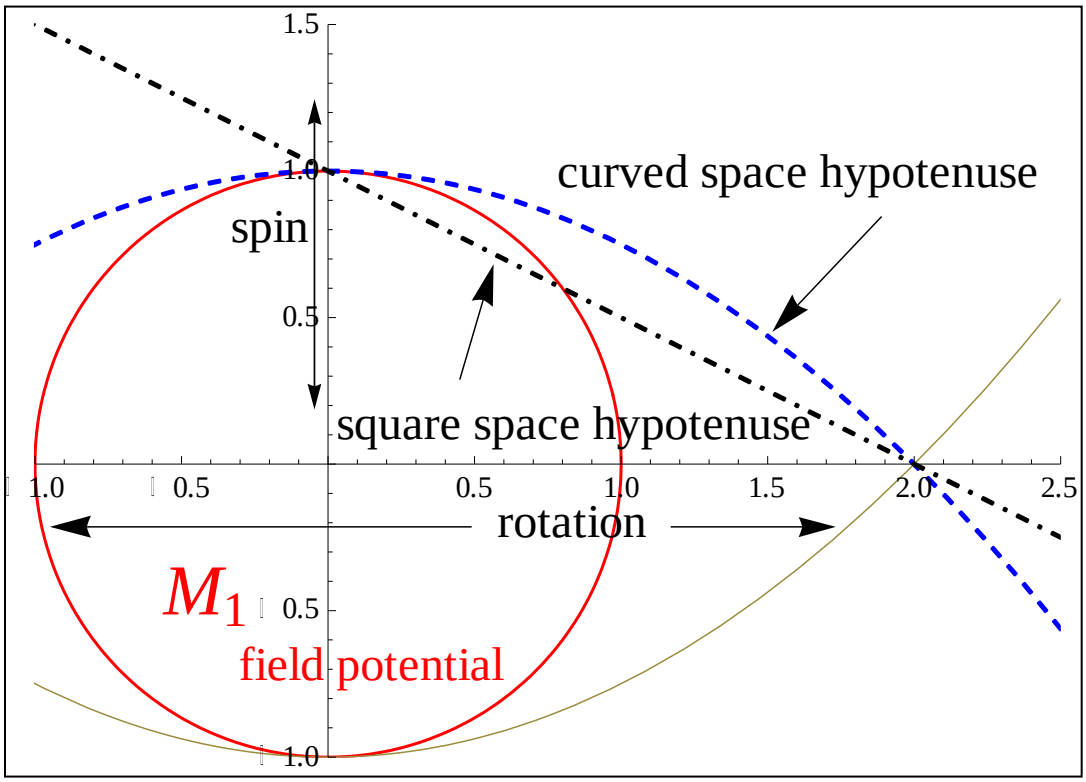
CAGE FREE THINKIN' FROM THE SAND BOX

The square space hypotenuse of Pythagoras is the secant connecting (π/2) spin radius (0, 1) with accretion point (2, 0). I will use the curved space hypotenuse, also connecting spin radius (π/2) with accretion point (2, 0), to analyze g-field mechanical energy curves.



CSDA demonstration of a curved space hypotenuse and a square space hypotenuse together.

We have two curved space hypotenuses because the gravity field is a symmetrical central force and will have an energy curve at the **N** pole and one at the **S** pole of spin; just as a bar magnet. When exploring changing acceleration energy curves of M_2 orbits, we will use the N curve as our planet group approaches high energy perihelion on the north time/energy curve.

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SANDBOX GEOMETRY WEB SITES:

1. (sandboxgeometry.com) Oldest site, untouched since inception by Betsy Labelle; 1st Q 2011 (no longer web master).
2. (sandboxgeometry.info) my Blog/Diary.
3. (sandboxgeometry.org) Dated record of abstract presentation. A learning curve so to speak; about CSDA development.
4. (sandboxgeometry.net) unused.

BIBLIOGRAPHY (21st Century internet used extensively as well as smart lookup for language word utility and *fit*).

Mathematica References:

1. The *Mathematica* Book (version 4, 4th edition). Stephen Wolfram
   Cambridge University Press
2. Modern Differential Geometry of Curves and Surfaces with *Mathematica*
   Alfred Grey; *CRC* Press.
3. The Beginners Guide to *Mathematica* (version 4)..Jerry Glynn, Theodore Gray
   Cambridge University Press

Data Reference for our Planet Group:

4. Hand Book of Chemistry and Physics (64th Edition, 1983-1984) *CRC* Press
5. Exploration of the Universe. George Abell;
   Holt, Rinehart, and Winston; 1968

Geometry:

6. A History of Greek Mathematics, Volume I & II. Sir Thomas Heath; 1921
   Republished by Dover Science Books; 1981
7. Research & Education Association PROBLEM SOLVERS, Plane, Solid, and Analytic

Geometry

8. Elements of Plane and Spherical Trigonometry..Daniel A. Murray; Longmans, Green, And Co.; 1912
9. Plane Geometry.. Betz and Webb, Ginn And Company; 1912
10. Analytic Geometry; Drs. Wilson and Tracey.. D C Heath and Co. ; 1925

Physics:

11. Adventures in Physics; Highsmith & Howard.. WB Saunder and Co. 1972
12. Physics, Hausmann & Black, D. Van Nostrand Company; 1939
13. A Contemporary View of Elementary Physics, Borowitz & Bornstein McGraw-Hill; 1968

Mathematics:

14. Research and Education Association; The Vector Analysis Problem Solver
15. Algebra, Trigonometry, and Analytic Geometry; Rees and Sparks.. McGraw-Hill; 1967
16. Calculus of a Single Variable; Larson, Hostetler, Edwards..Houghton Mifflin Co 1998
17. Research and Education Association; Calculus Problem Solver
18. Analytic Geometry and the Calculus; A. W. Goodman..Macmillan Publishing Co 1974
19. Calculus with Analytic Geometry; Louis Leithold-USC; Harper and Row 1968 My first Calculus Text Book; Thank you Mr. Louis Leithold.

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