Wolfram Virtual Tech Conference Oct. 2021

A parametric Geometry treatment of two acceleration fields

July 1
2021

Galileo discovered properties of Earths Uniform Acceleration Field about the same time Johann Kepler uncovered the problematic fit of circles with observed period curve of Mars . Circular orbit curves for M2 cannot accommodate period curves of M2 . The difficulty of problematic fit turns out to be two types of accelerations work stable M1M2 orbits. Galileo' s uniform acceleration, a freefall vector normal with surface curvature of M1, and changing motive energy of period motion (Sir Isaac Newton' s displacement radii) needed to accommodate conserved angular momentum of M2 . Two accelerations. Conserved Energy: defining amount of energy to be shared between G-field potential and motion. Conserved Angular Momentum: a means to change orbit shape to accommodate energy distribution between M2 and M1. Joint participation, energy and momentum locked together sustaining M1 & M2 stable orbits using two Central Force Gravity Field Accelerations. This paper will use Euclidean Parametric Geometry to demonstrate Kepler's Empirical #2 as Conserved Mechanical Energy, and Sir Isaac Newton' s displacement radii to construct changing shape of motive energy curves demonstrating Conserved Angular Momentum of M1M2.

Uniform Acceleration and Uniform Changing acceleration.

This Readings document started Friday, July 2, 2021; 04:14.

ALΣXANDΣR; CEO SAND BOX GEOMETRY LLC

I write about two central force fields of gravity. Galileo's uniform acceleration, source providence of Kinematics. And Sir Isaac Newtons inversed displacement radii with respect to Central Force **F**. Motive energy of M_2, specifically Keplers Empirical#2, or Sir Isaac's Conserved Angular Momentum of orbit motion.

Beginnings.

1. A GeoGebra demonstration on Natural G-field orbit curves. We see the average diameter and energy is constant of proportionality. We then prove average curvature of orbit is relative with all period curves of orbit.
   (P. 3-7)
2. Using average parameters of orbit motion, High limit ecurves (perihelion/perigee) and low limit ecurves (aphelion/apogee), we construct triangular energy corrals and demonstrate with Euclidean Area formula equivalent area per orbit sweep per unit time of orbit motion, marking S&T2 limiting curves perihelion (highe) and aphelion (lowe) onto the curved space directrix.
   (P. 8-12)
3. Using Sir Isaac Newton's Universal Law of Gravity, I demonstrate means to construct Conserved Angular Momentum energy curves of an M_1M_2 system using shaped dynamic motive energy curves of orbit motion.
   (P. 14-19)

21 pages; 3200 words

Tuesday, July 6, 2021; 02:42.

1. A GeoGebra demonstration on Natural orbit curves. We see the average diameter and energy is constant of proportionality.

PART#1. Relative orbit curve.

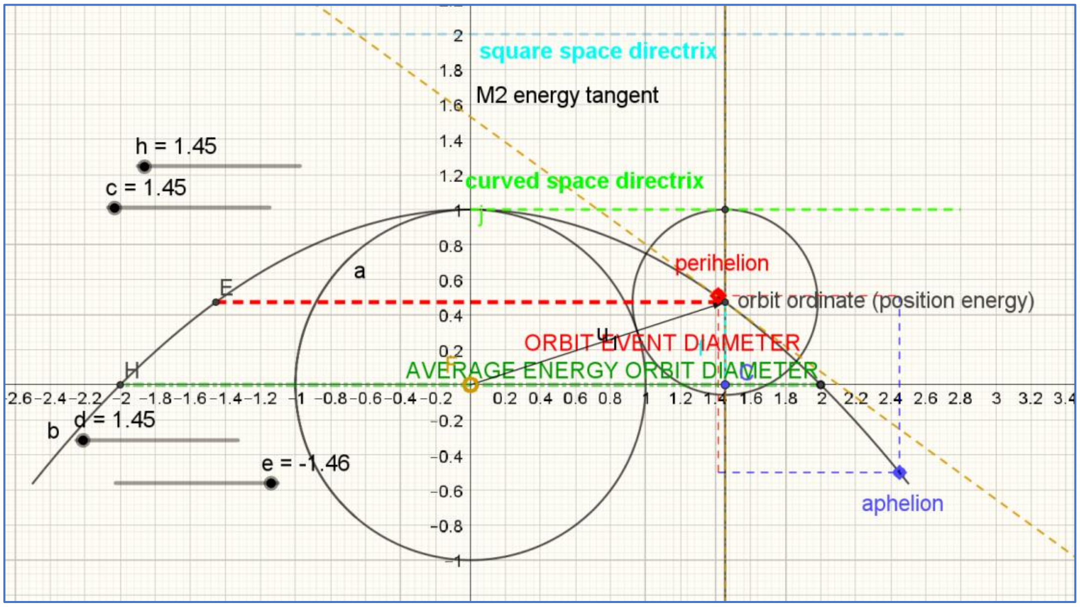


Figure 1: Basic **CSDA** construction of M2 orbit curves. M2 energy tangent is approaching high energy event of orbit period.

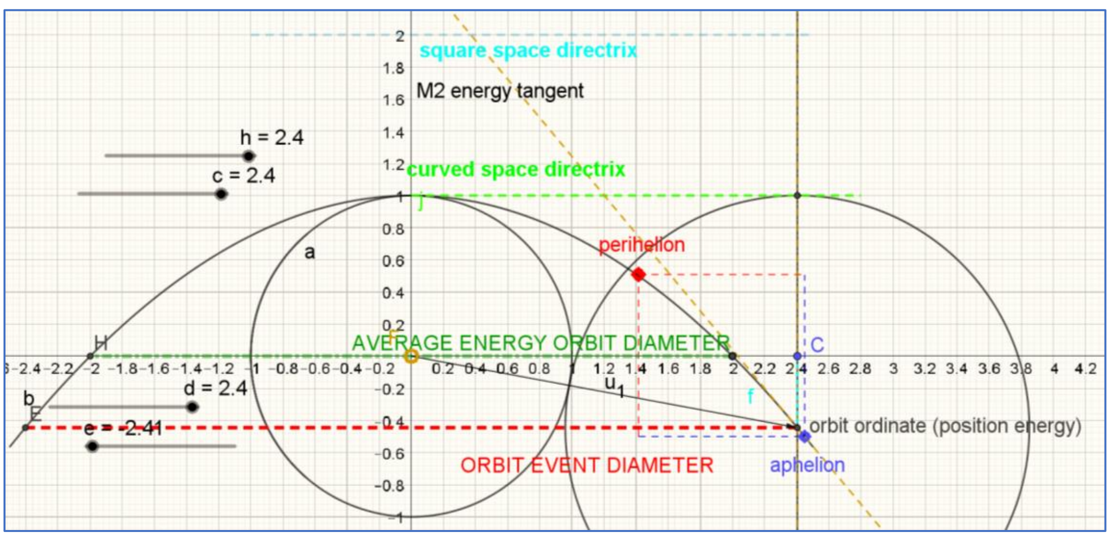


Figure 2: Basic **CSDA** construction of M2 orbit curves. M2 energy tangent is approaching low energy event of orbit period.

This URL goes to my GeoGebra Cloud for shared energy demonstration.

https://www.geogebra.org/m/gsdbvt8h

MECHANICAL ENERGY CURVES OF THE Gfield (GeoGebra1)

GeoGebra presentation 1 is mechanical energy experienced by M_1 and M_2. The following proof defines inversed square of displacement radii mechanics of an orbit.

Theorem (On the Potential and Motive Circles of Galileo)

1). THEOREM: LAW OF CONSERVED ENERGY AND G-FIELD ORBIT MOTION: Since energy exchanged between these two curves (motion and potential) determines orbit momentum, we need two equal curves to initialize shared energy QUANTITY, when added together zero balance the exchange for stable orbit motion. Somewhere, on the period time curve, there will be a motive curve of same shape as potential less the composition of M_1. Enter the latus rectum average orbit diameter, reference level of gravity field orbit energy curves. It is here, and only here, on the average diameter of an orbit can two unity curves co-exist.

2). Motive curve M_2 + energy level $(f(r))$ = Gfield M_1 potential curve.

3). Potential curve M_1 - (Motive curve M_2 + energy level $(f(r))$ = zero

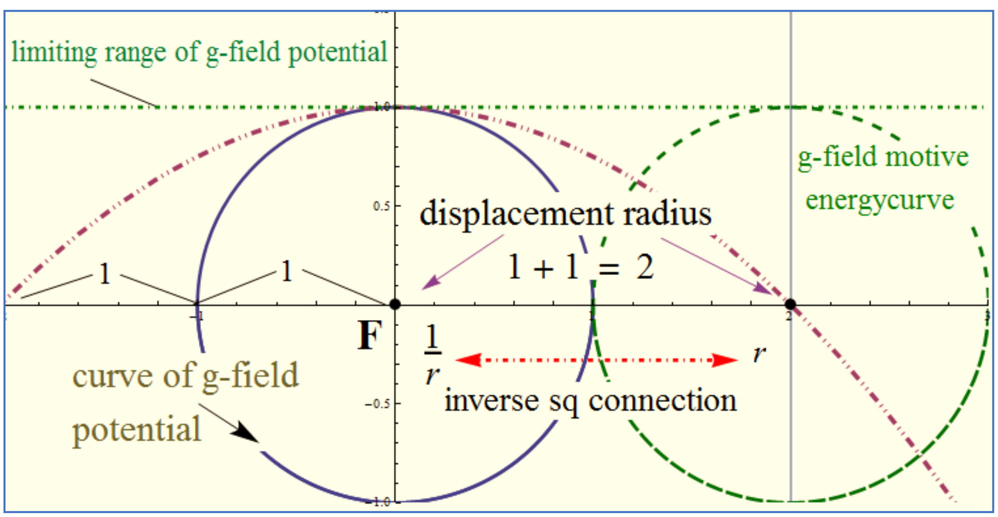
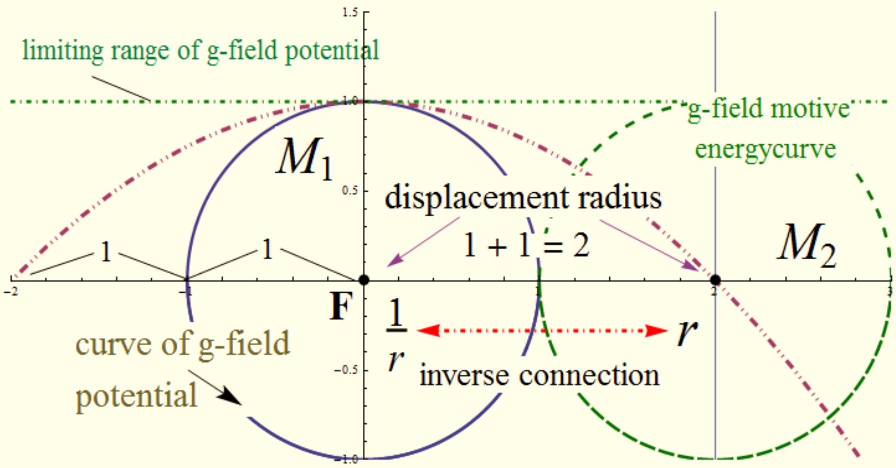


Figure 1: Basic **CSDA**. Independent curve is M1 potential, dependent parabola is period time curve; monitors M2 orbit motive energy $(f(r))$ with respect to M1. (see fig2 for source)

Prove shape of average motive curve = shape of potential curve.

Construct two unity curves, one as central force potential, and one at negative slope event (- 1) on the gfield time curve. This cooperative endeavor gives us a two unit event radius happening at (-1) slope event time and energy curve.



Notice the inverse connection: G-field M1 unity curve contains the complete history of micro infinity event curvature; and outside the surface curve of M1 potential we find the complete history of macro infinity square space event radii. Plane Geometry Inversed connections are the g-field tether connecting M2 event radii motion in square space with the micro infinity curving phenomena of gravity field M1 potential.

Figure 3: slide 15 2014 JMM USB; JMM Wolf. talks, abst 1,2,3.

- Construct two unity curves, one as central force potential, and one at slope (-1) event, as center on G-field time/energy curve. This is the only place on the orbit time/energy map that two unity curves can co-exist. This cooperative endeavor gives us a two-unit radii displacement event composed using two-unit radii, one for potential energy and one for motion.
- Notice the inverse connector joining potential curvature (micro-infinity) with (macro-infinite) event radius of curvature. Only on a **CSDA** average energy curve diameter can event (r) and its inverse exist as two distinct congruent curves composed using a two-unit event radius metered connection of both our infinities.

Prove shape of average motive curve = shape of potential curve $(1\cos(t), 1\sin(t))$.

1. Construct range of potential as a tangent limit through orbit space $(t, 1)$. (Curved Space Directrix)
2. Construct shape of potential curve (curvature = 1) about center **F**; given.
3. Compute and construct shape of motive curve at event (m = -1), using:

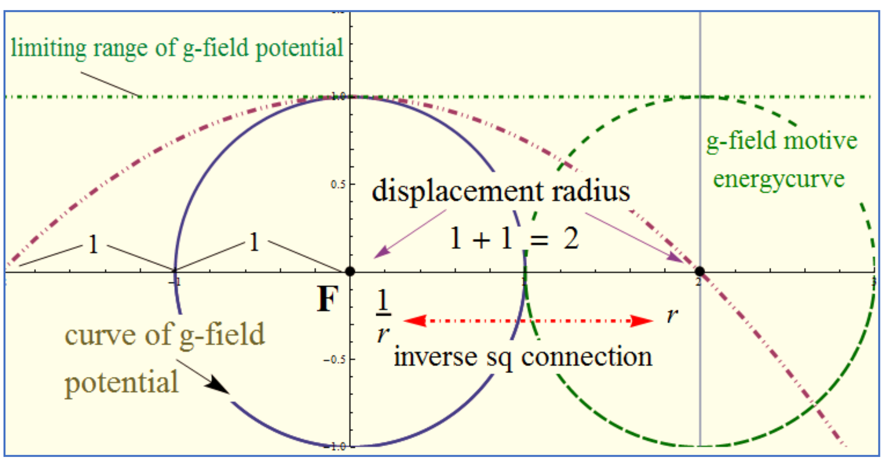
a) focal property difference.
b) Sir Isaac Newton's Universal Gfield law.

a) radius of motive curve = (focal radius mag - potential) ⟶ 2 - 1 = 1

b) shape of motive energy using displacement radius of M_2 from M_1:

$$\left(\left(\frac{1}{2}\right)^2 \times 4(1)\right)^{-1} = 1$$

(about method (b)): Where (2units) is displacement focal radius and $4(1unit)$ is system Latus Rectum (constant of proportionality) as average energy *and* average diameter of M_2 orbit. Result term is inversed to change orbit curvature into displaced radius of that curvature.



SLIDE 20: Going from orbit radius of curvature to inverse square event curvature.

$$[F_{acc} \propto G\frac{(M_1 \times M_2)}{r^2} = F_{acc} \propto (k \times \left(\frac{1}{\mathrm{r}}\right)^2)]$$

To use Sir Isaac Newton's Inverse Square law to construct and prove shape of energy curves, I need to roll the fixed parameters of event radius orbit math into one constant of proportionality as coefficient to curvature.

Since *specific* M_1 and M_2 won't change much in our lifetime roll them into G and let them = constant of proportionality (k); we have: $\left(\frac{1}{r}\right) = curvature$

$$\left(k \times \left(\frac{1}{r}\right)^2\right)$$

To surmise the shape of the motive energy curves we invert to convert curved space math into square space math.

$$\left(k \times \left(\frac{1}{r}\right)^2\right)^{-1} = \text{ shape of motive energy curve.}$$

I found the **CSDA** latus rectum diameter is the g-field constant of proportionality. QED: massive Gfield energy curves.

ALΣXANDΣR; CEO SAND BOX GEOMETRY LLC (12/31/2017)

The main difference between the Plane Geometry of Euclid and the Plane Geometry of Gravity Curves would have to be Euclidean utility of position. Euclidean geometry will work pursuing discovery of gravity curves, not with position alone but time and energy of position. Just let it breath.

Alexander, February 2008

Methods of construction for G-field ME for STEM HS and Middle School.

All orbit energy balancing is done on the curved space directrix. M_1M_2 energy distribution is accomplished with Galileo's S&T1 Space and Time Square. This allows distribution of available energy of an M_1M_2 system between potential and motion. Energy distribution is accomplished with two unity curves of a basic **CSDA** (curvature and radius of curvature are 1). Such an event happens when **CSDA** energy tangent (e) reads slope $(m = \pm 1)$@ +latus rectum endpoint $(2, 0)$.

Let (a) be the potential energy curve of (M_1). Let (d) be the motive energy shape of (M_2) motion. Let (b) be the period curve of M_2. Let (c) be the curved space directrix. Let (m) be etangent with $(m = -1)$ @ event $(2,0)$ on M_2 period time curve.

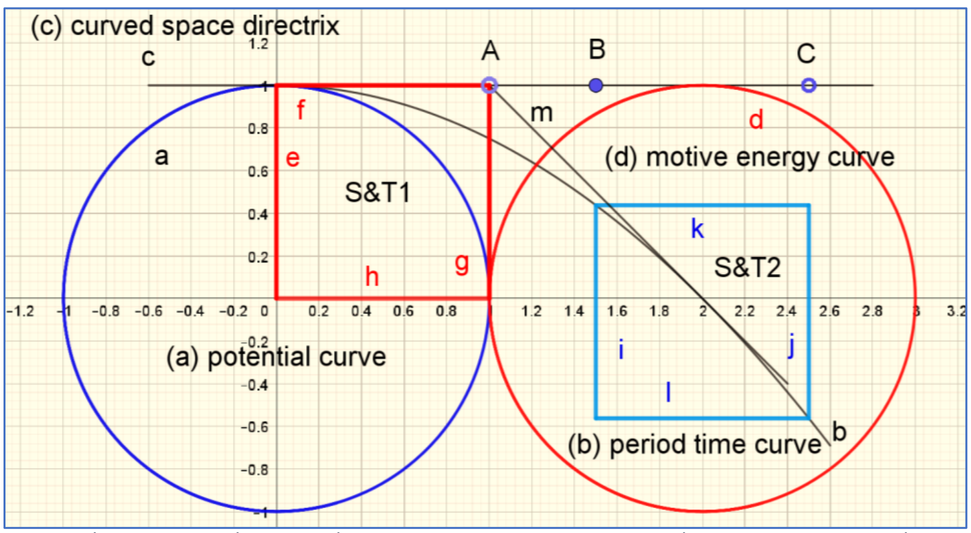


Figure 4: basic CSDA with potential curve, motive energy curve, period curve, etan curve, and curved space directrix. (orbit S&T balance.ggb; 12.1DEC20 orbit decay USB)

Next step is constructing S&T1 of Galileo. S&T1 will fix G-field central force ME parameters of surface acceleration curve of (M_1), summing available orbit ME on the system latus rectum diameter of M_1M_2, the average orbit diameter happening @ event $(2,0)$ $where$ $(etan\ m = -1)$ on the period time curve. Galileo's S&T1 holds the mass/volume content of all primary central force $(M_1{}'s)$.

Let S&T1 be of Galileo and S&T2 be of Sir Isaac. The construction exhibits two balanced energy curves (potential and motion) and two congruent S&T space-time squares (S&T1, Galileo and S&T2, Sir Isaac).
By congruent space and time squares, I reference the S&T1 corner (A) above acceleration curve of M_1 as 1^{st} sec free fall position of Galileo (S&T1). When the space&time ME experience of S&T1 control diagonal is copied, (position (A) to central force F of S&T1) and used to construct S&T2 space and time square, S&T1 ME free fall diagonal will produce equivalent Cartesian ME of space-time orbit events curves @ S&T2; such curves under influence control of S&T1 mass volume potential. i.e., $(1 \sec space, 1 \sec time)$. $[e \cong i, h \cong l, g \cong j, f \cong k]$.

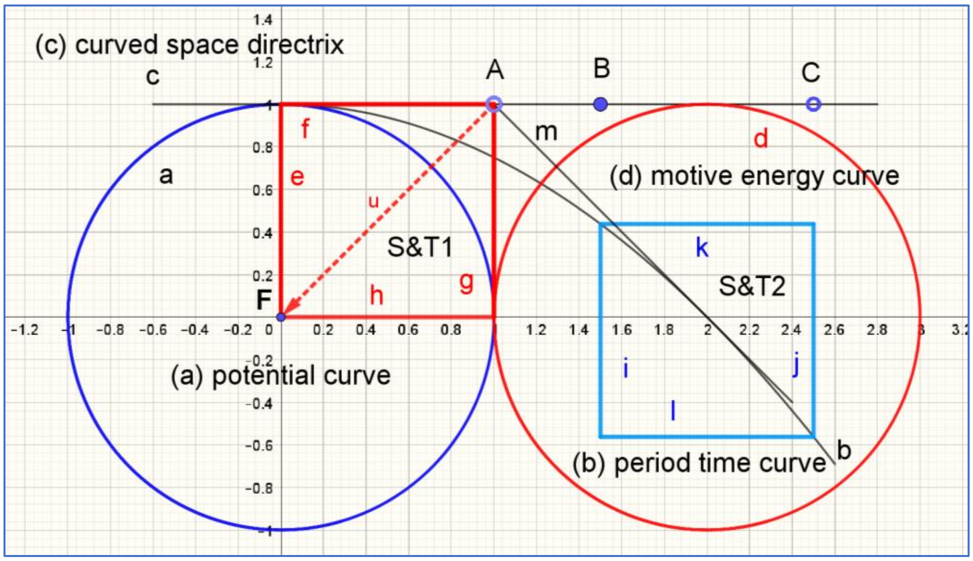


Figure 5: basic CSDA with two balanced energy curves and two congruent (S&T!)&(S&T2) space and time squares. (12.1DEC20orbit S&T balance ggb)

Transferred ME experience of S&T1 is collected on a curved time diagonal for Sir Isaac Newton's S&T2). Projected proportional ME for S&T1 of our planet mass/volume potential onto a S&T2 curved time diagonal enables S&T1 Earth to become a primary M_1. A means to balance sustainable motion for two mass systems in orbit: M_2 (Moon) about M_1 (Earth).

GIVEN: ORBIT PARAMETER FOR CONSTRUCTION ARE ARBRITARY:

High Energy: $\left(\frac{3}{2}, \frac{7}{16}\right)$.
Average energy and diameter: $(2, 0)$.
Low Energy: $\left(\frac{5}{2.}, \frac{-9}{16}\right)$.

Next, we need construct 3 points on the curved space directrix.
1st point (A); will be Cartesian location of balance pin (boundary of our micro space and macro space infinities). We can triangulate unity curve energy distribution between potential and motion using position vector (r) and etangent (m). Let this etriangle (F,A,D) be sum total of available orbit ME.
2nd point (B); will be a position vector (p) connection between central force **F** and Sir Isaac's (high energy curve) displacement radius perihelion on the curved space directrix $(1.5, 1.0)$ using S&T2 event abscissa $(r, f(r))$ on the time curve produced. Link etriangle (F,B,D) using segment (q) to close energy triangulation.
3rd point (C); will be a position vector (s) connection between central force **F** and Sir Isaac's displacement radius (low energy curve) aphelion on the curved space directrix $(2.5, 1.0)$ using S&T2 event abscissa $(r, f(r))$ on the time curve produced. Link etriangle (F,C,D) using segment (t) to close energy triangulation.

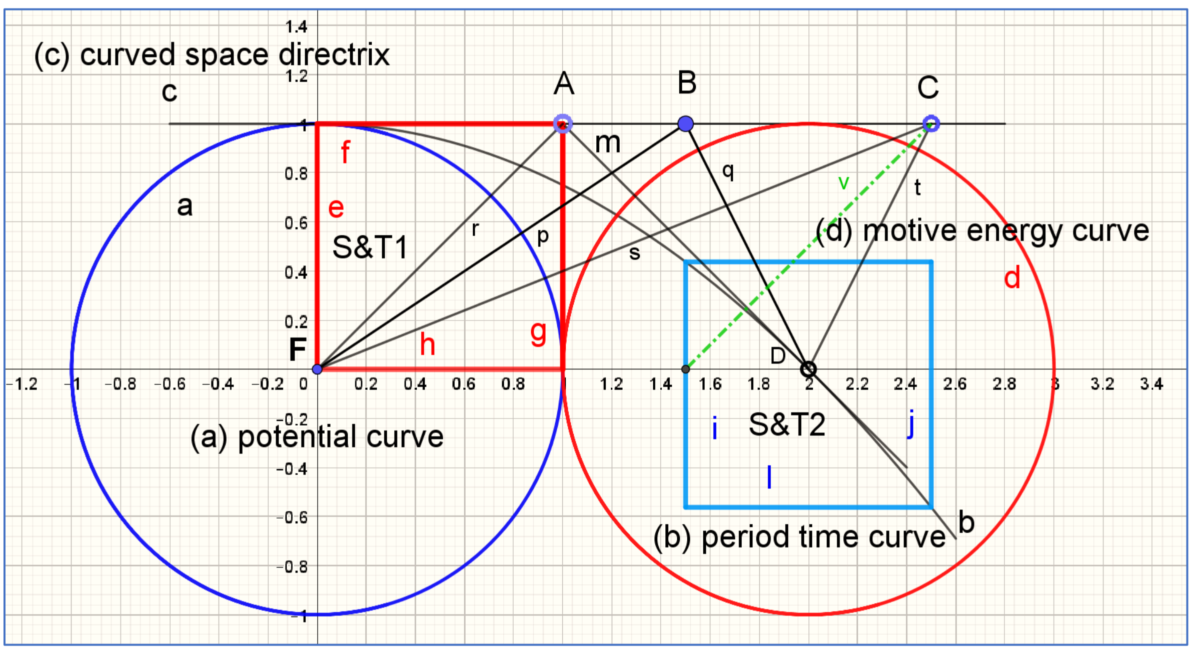


Figure 6: mapping conserved energy distribution of M1M2 changing acceleration orbit curves. (12DEC20 orbit energy dist)

Position vectors are origin vectors connecting potential energy of **F** with range of orbit motion ($f(r)$) via the curved space directrix.

The average diameter of any M_1M_2 system has sum-total of available ME of orbit, making all orbit events on M_2 period time curve relative with ME possessed by the average orbit diameter. This fact is proven in monologue concerning Sir Isaac Newton's S&T2.

Johannes Kepler Second Empirical Law.

A line segment joining a planet and the Sun sweeps out equal areas during equal intervals of time.

Do a Google search and see drawings of elliptical orbit and equal area distribution per unit-time. In other words, for each second of orbit, displacement radii of Sir Isaac Newton will change magnitude. M_2 will change velocity (motive energy) to sketch equivalent area of orbit sweep per unit time because of changing triangulation.

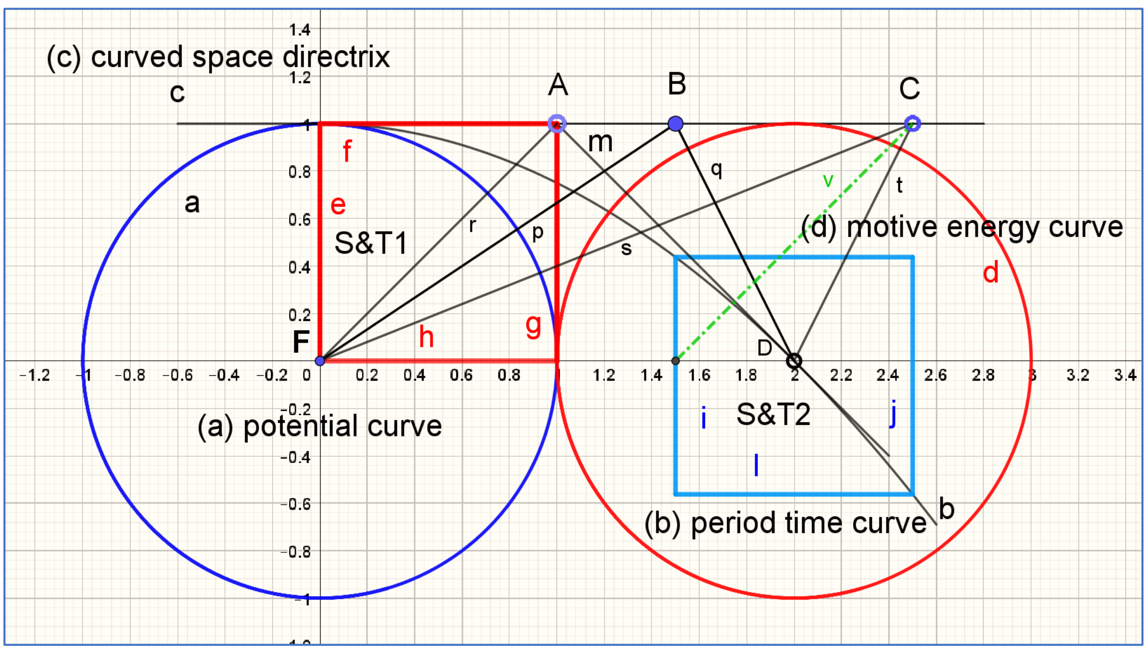


Figure 7: basic CSDA construction map for orbit ME distribution of M_1M_2.

Consider ($e\Delta FAD$). Let this be a curved space energy distribution triangle. Half to potential and half to motion.

Position (A) is the median marker demonstrating the linear connecting principal between square space and curved space. Point (A), links abscissa marker $(.5\ inversed\ radii\ curvature\ with\ 2.0\ average\ displacement\ (r))$ as the **CSDA** inverse square connector; providing a sum of two acceleration energy, M_1 potential and M_2 motive energy.

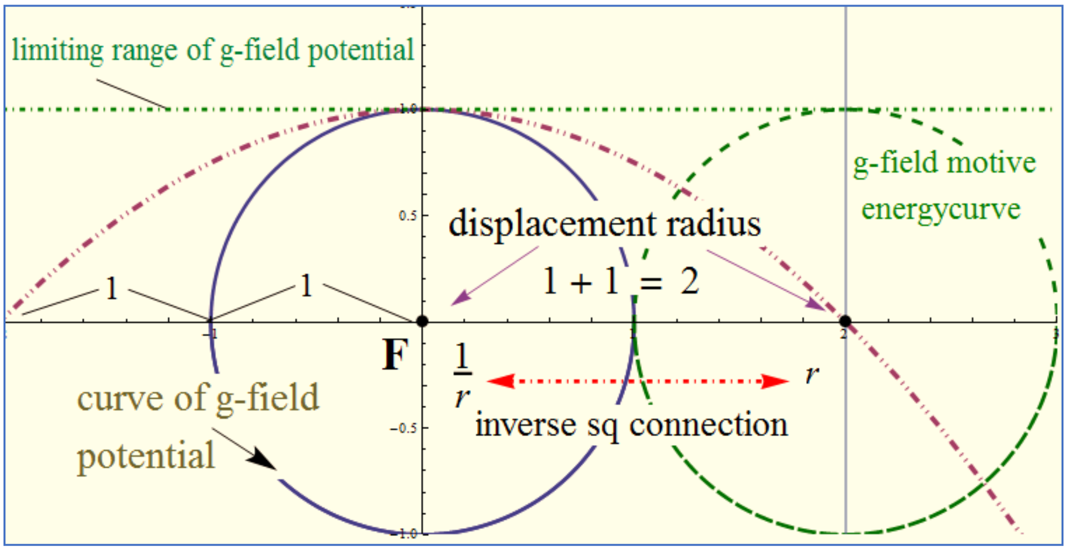


Figure 8: Basic CSDA @ event energy tangent slope (m = 1) with two unity energy curves of a central force, (P. 5)

(A) is the pin of a natural perpetual energy pendulum, congruent area per unit time orbit sweep connecting curved space potential (.5, 0) with square space average energy curve (2, 0) via range location on the curved space directrix. All energy triangulation sums 1 unit orbit ME. The base of each

$$(e\Delta FAD), (e\Delta FBD), and\ (e\Delta FCD)$$

all share the same average energy base; 2 units. All exist with altitude 1-unit curved space. Each area sketched per unit time orbit sweep constructed on the curved space directrix sums to 1 unit ME as explained by Johann Kepler.

All happening via Galileo's S&T1 abscissa boundary separating micro infinity from macro infinite space.

to construct angular momentum curves, we need convert NASA data from square space to curved space units.

basic template for pursuit of standard g-field orbital

MARS

step #1 compose data field.

central relative position	square space	curved space
perihelion	206 620 000	1.81305
aphelion	249 230 000	2.18695
average	227 925 000	2
ASI	113 962 500	1
AVERAGE V		24.13
f (π)	20 309 300	0.178211
f (α)	-22 300 700	-0.195685
average v	24.13	24.13
focal radius (π)	207 615 700	1.82179
focal radius (α)	250 225 700	2.19569

Figure 9: source; USB Search&found; central orbit parameters.

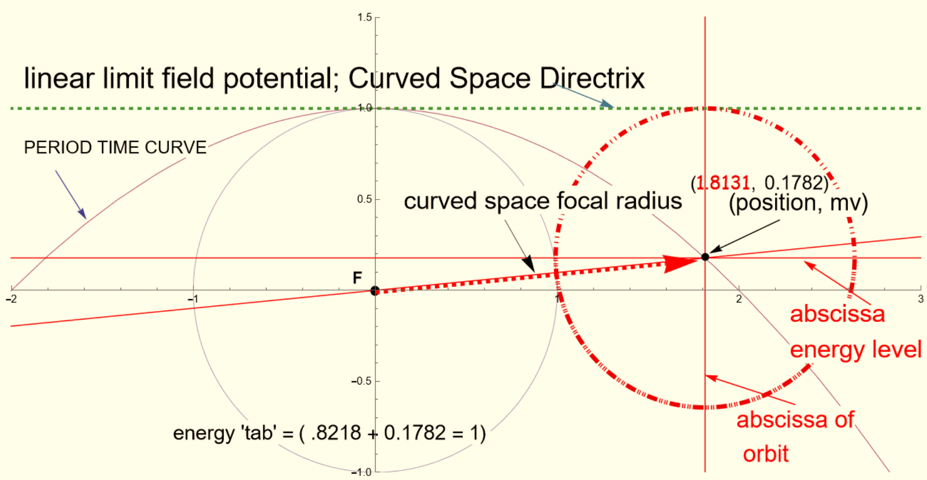
Two methods are used to shape motive energy curves. Basic subtraction of potential from position vector magnitude and Sir Isaac's Universal Law of Gravity.

Slide 0 of 1

Step 7: CONSTRUCT HIGH ENERGY MOTIVE CURVE OF MARS ⟶ $(2p - f(r) - 1)$ = motive curve

2 p (reference level) − f (r) energy level − potential = motive curve radius

2 - 0.1782 - 1 = 0.8218 = {0.8218 * Cos[t] + 1.8131, 0.8218 * Sin[t] + 0.1782}



Sir Isaac Newton's Inverse Square Law (1.8131, 0.1782):

$$\left(\left(\frac{1}{1.8131}\right)^2 * (4)\right)^{-1} \rightarrow (0.821833) = \textbf{shaping radius of motive energy}$$

Figure 10: source; JMM 2014 .nb; JMM Wolf talks USB

basic template for pursuit of standard g-field orbital

MARS

step #1 compose data field.

central relative position	square space	curved space
perihelion	206 620 000	1.81305
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AVERAGE V		24.13
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average v	24.13	24.13
focal radius (π)	207 615 700	1.82179
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Figure 11: source; USB Search&found; central orbit parameters.

Two methods are used to shape motive energy curves. Basic subtraction of potential from position vector magnitude and Sir Isaac's Universal Law of Gravity.

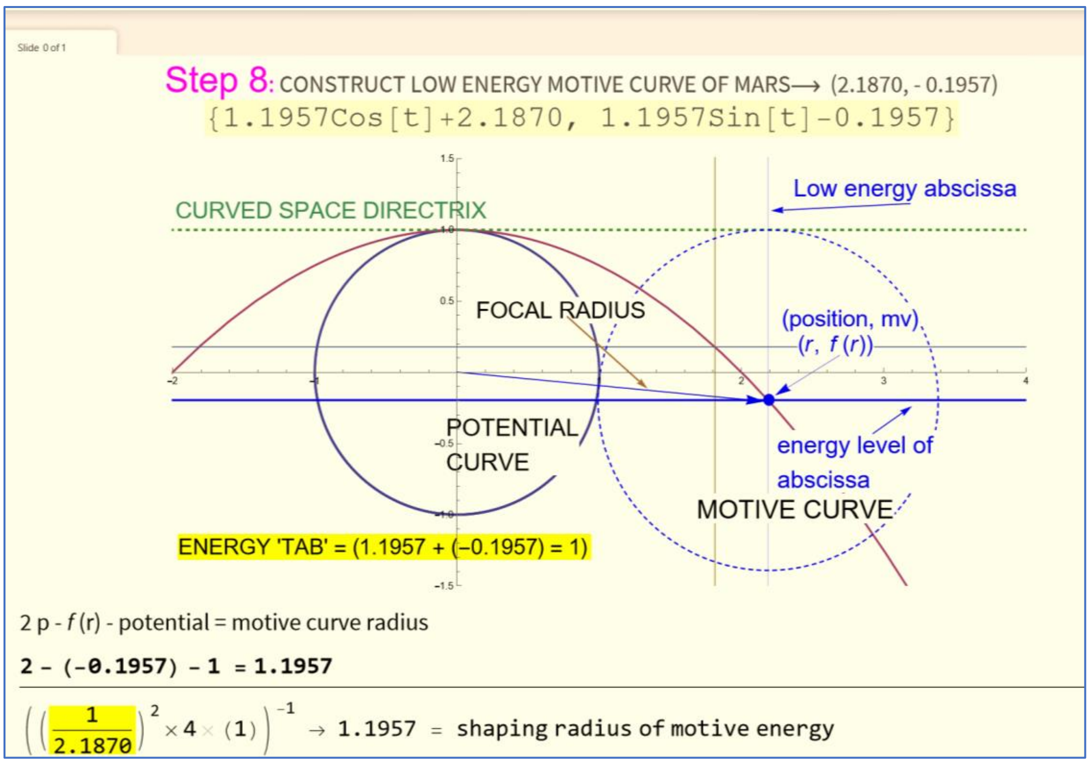


Figure 12: source; JMM 2014 .nb; JMM Wolf talks USB

I am taking a shortcut producing Sir Isaac Newton's conserved Angular Momentum of orbit ME. Stuffs already been done and I find it hard to focus on stuff done. First a little about Galileo (2014 JMM)

Section 4; part 5 (Space Curves of Mars)

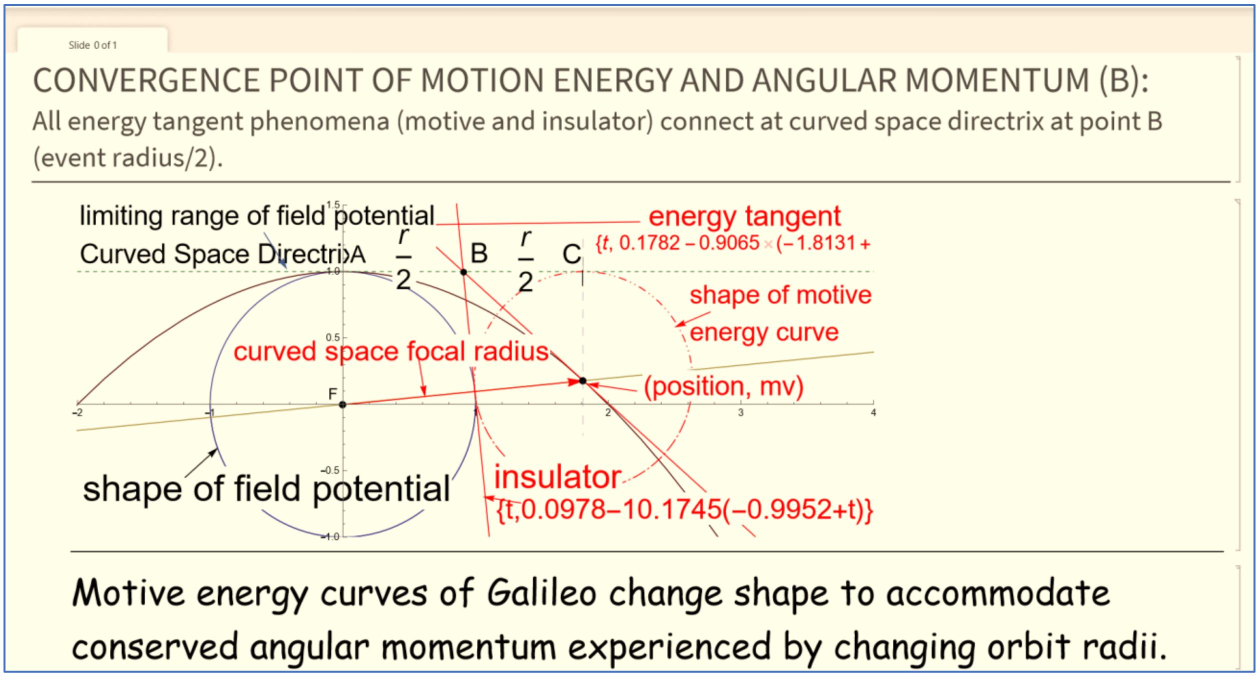
On The Heliocentric Circular Mechanical Energy Curves of Galileo

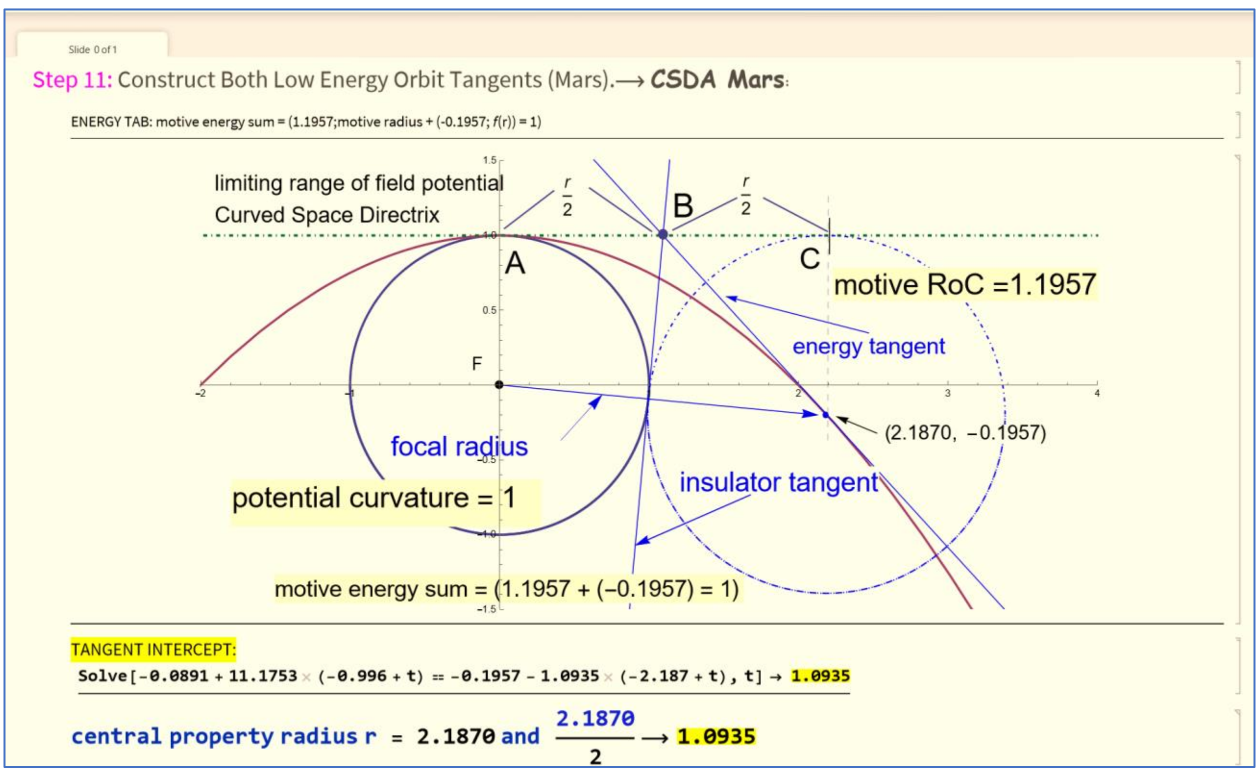
Galileo, born 7 years before and dying 12 years after Kepler, was well aware of Kepler's solution concerning complexity about orbit parameters of our brother planet Mars. He refuted till his death, Keplerian elliptical planetary motion as much too complicated a curve. Though a heliocentric advocate as was Kepler, he held that natural curves of an orbit required simplicity and therefore must be circular. This paper explores Galileo's concept of circular heliocentric planetary motion. I develop a standard gravity field M_1M_2 model using two plane geometry curves, a unit circle and its construct unit parabola, creating a plane geometry function needed to measure g-field central force energy curves. It turns out that g-field inverse square energy curves are spherical, can be constructed using NASA sourced observation parameters of our planet group and moons, build a standard model space and time square, once constructed provide analytics for orbit momentum around our sun and across the g-field time curve, all within reach of STEM HS math. Both orbit curves, his circles and Kepler's ellipse, can be used to explain gravity field orbit mechanics, I invoke Sir Isaac Newton's inverse square law to confirm Galilean perception.

I have always been fascinated by space curves. Allow me to take you back to Galileo and Kepler, to the beginning exploratory of a g-field space curve known as Mars. Galileo and Kepler were contemporaries; Galileo lived 11 years longer than Kepler and was aware of Kepler's solution concerning the enigma the orbit of Mars presented. He refuted Kepler's argument defining the space curve Mars claiming 'the ellipse is much too complicated a curve to be used by God to move His planets; they move in circles'. I will show the perception of Galileo is also correct, maybe more so.

Your abstract has been successfully processed for the **Baltimore, Maryland** meeting.

Your abstract number is: 1096-F1-592.


Slide 0 of 1
CONVERGENCE POINT OF MOTION ENERGY AND ANGULAR MOMENTUM (B):
All energy tangent phenomena (motive and insulator) connect at curved space directrix at point B (event radius/2).
limiting range of field potential
Curved Space Directrix
A
r/2
B
r/2
C
energy tangent
{t, 0.1782 – 0.9065 × (–1.8131 +
shape of motive
energy curve
curved space focal radius
F
(position, mv)
shape of field potential
insulator
{t,0.0978–10.1745(–0.9952+t)}
Motive energy curves of Galileo change shape to accommodate conserved angular momentum experienced by changing orbit radii.


Slide 0 of 1
Step 11: Construct Both Low Energy Orbit Tangents (Mars).⟶ CSDA Mars:
ENERGY TAB: motive energy sum = (1.1957;motive radius + (-0.1957; f(r)) = 1)
limiting range of field potential
Curved Space Directrix
r/2
B
r/2
A
C
motive RoC =1.1957
energy tangent
F
(2.1870, –0.1957)
focal radius
insulator tangent
potential curvature = 1
motive energy sum = (1.1957 + (–0.1957) = 1)
TANGENT INTERCEPT:
Solve[-0.0891 + 11.1753 × (-0.996 + t) == -0.1957 - 1.0935 × (-2.187 + t), t] → 1.0935
central property radius r = 2.1870 and 2.1870/2 ⟶ 1.0935

Slide 17:

Dialogues: CONSTRUCT HIGH ENERGY MOTIVE CURVE OF FIELD. If motive properties of a planet vary as the inverse square of distance, we must subtract field potential part from a curved space focal radius to determine shape of curved space motive energy part. Since all motive parameters are subservient to potential, acting motive curve will:

Maintain contact with limiting range of field potential (g-field curved space directrix), and

Maintain contact with surface acceleration curve of potential (in a similar way as we are captured by surface acceleration curve of our earth).

Once we have radius of motive curve, place motive Cartesian center, (r, f (r)), on **CSDA** orbit period time curve.

Slide 20: Dialogue: Construct High Energy Insulator Tangent separating opposing forces of attraction and escape. (Slope of insulator is normal with focal radius). To find (abscissa, ordinate) needed for point slope parametric definition, use right triangle direct proportion with unknown as second proportional and curvature of potential (= 1) as the first proportional. Proportional 3 and 4 operate using event focal radius as hypotenuse numerator and (r, f (r)) as alternate denominator, r$\rightarrow$ for abscissa and f (r)$\rightarrow$ for ordinate.

Slide 21

Dialogue: CONVERGENCE POINT OF MOTION ENERGY TANGENTS

both tangent phenomena (motive and insulator) meet on the field curved space directrix at point B, (median of all square space event radii), demonstrating potential control of field motion as conservation law of angular momentum. (How do we get there?)

Linear energy distribution on curved space directrix seems to indicate shared equality showing half to potential, and half to motion. But this is a sourced zero-sum distribution property, as such, linear distribution geometry (shaping both curves) is equal once and only once, happening on the average energy diameter. Motive energy curves change shape to accommodate conserved angular momentum experienced by changing orbit radii. Change of shape splits distribution on curved space directrix, ½ to potential and ½ to motion

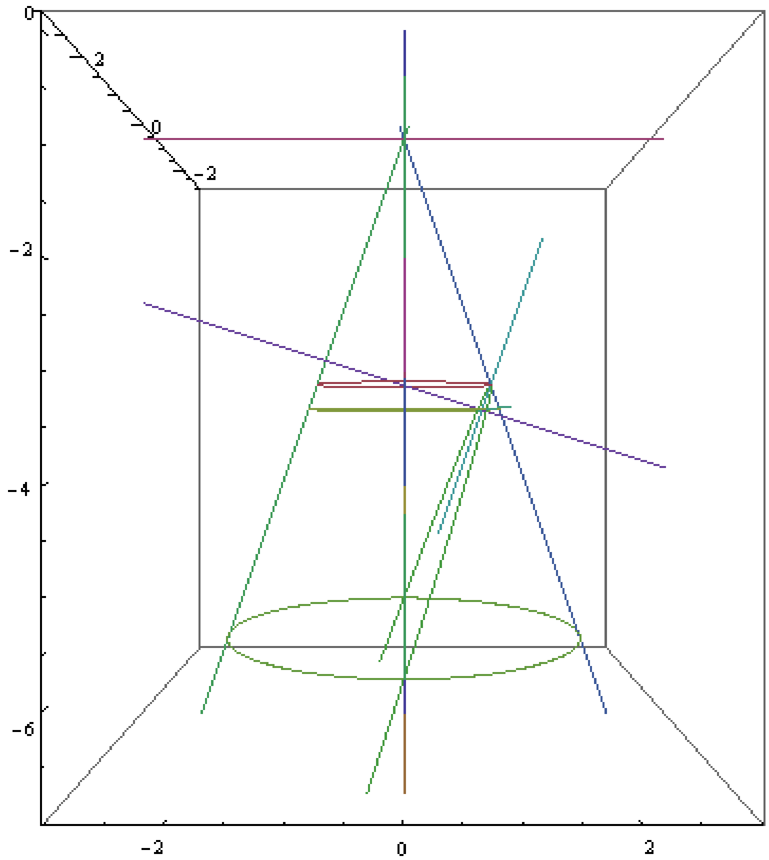
QED

End demonstration constructions of orbit ME as Conserved Angular Momentum.

ALΣXANDΣR; CEO SAND BOX GEOMETRY LLC

ALΣXANDΣR; CEO SAND BOX GEOMETRY LLC COPYRIGHT ORIGINAL GEOMETRY BY 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.



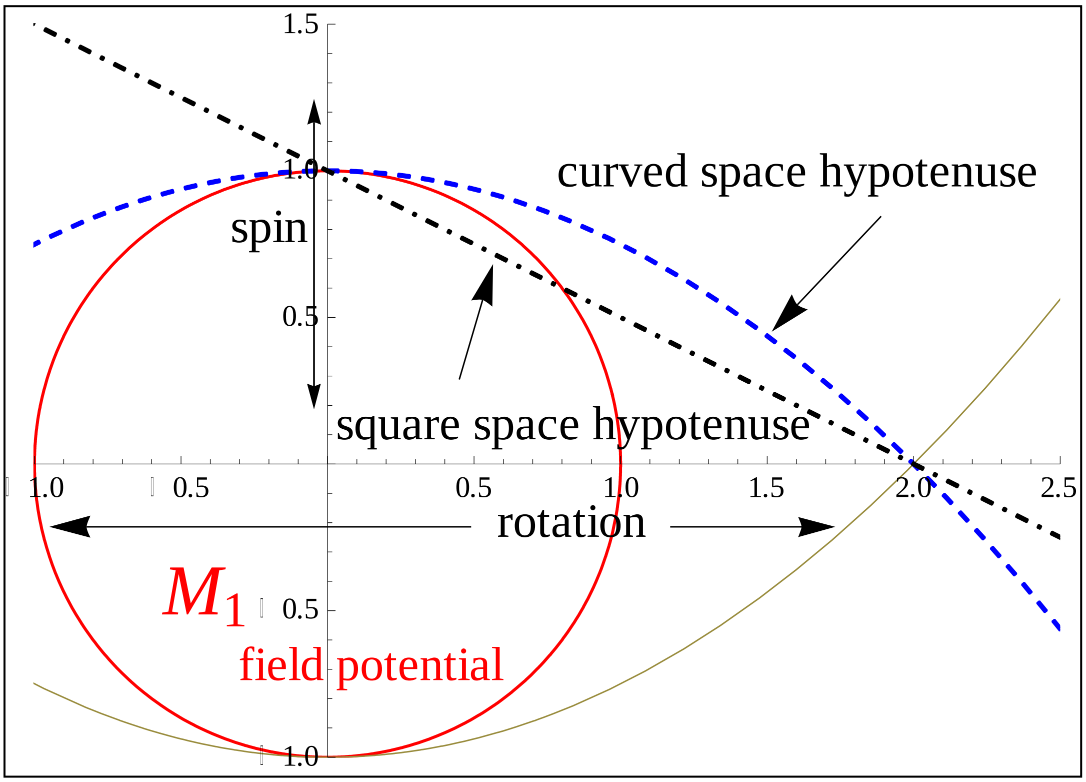
"It is remarkable that the directrix does not appear at all in Apollonius great treatise on conics. The focal properties of the central conics are given by Apollonius, but the foci are obtained in a different way, without any reference to the directrix; the focus of the parabola does not appear at all... 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.

ALΣXANDΣR; CEO SAND BOX GEOMETRY LLC

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.

ALΣXANDΣR; CEO SAND BOX GEOMETRY LLC