An elementary study of integer roots and exponents; and a Computer Based Math mechanical contrivance to construct parametric geometry rotating roots on central force average energy displacement radius of Sir Isaac Newton.

Accretion protocol parametric geometry	March 1 2020 10 pages 1600 words

Using exponent properties of Sir Isaac Newton's Universal Law (displacement radii as second-degree denominator), I find connection principals of G-field Space Curves. If we accept CSDA properties of M1M2 gravity field energy curves; such properties based on a fixed unity (k and (r of k) = 1) for potential, I examine the construction of roots on displacement radii as average M2 orbit energy diameter of a standard model CSDA latus rectum. We can do so by changing exponent (two) of square space, into radicand unit (2) as exploration integer for indices of curved space. Using mechanical inversed root solution curves constructed on standard model CSDA energy diameters, lead to a parametric geometry philosophy of gravity field mechanical properties of accretion by looking at shaped roots of curved space working within M1 square space.

Inversed roots of curved space

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M1 SPIN/ROTATION GEOGRAPHY

$$\text{ParametricPlot}[\{\{\text{Cos}[t], \text{Sin}[t]\}, \{t, \frac{t^2}{-4(1)} + 1\}\}, \{t, -\pi, \pi\},$$
$$\text{PlotRange} \rightarrow \{\{-3,3\}, \{\frac{-3}{2}, \frac{3}{2}\}\}]$$

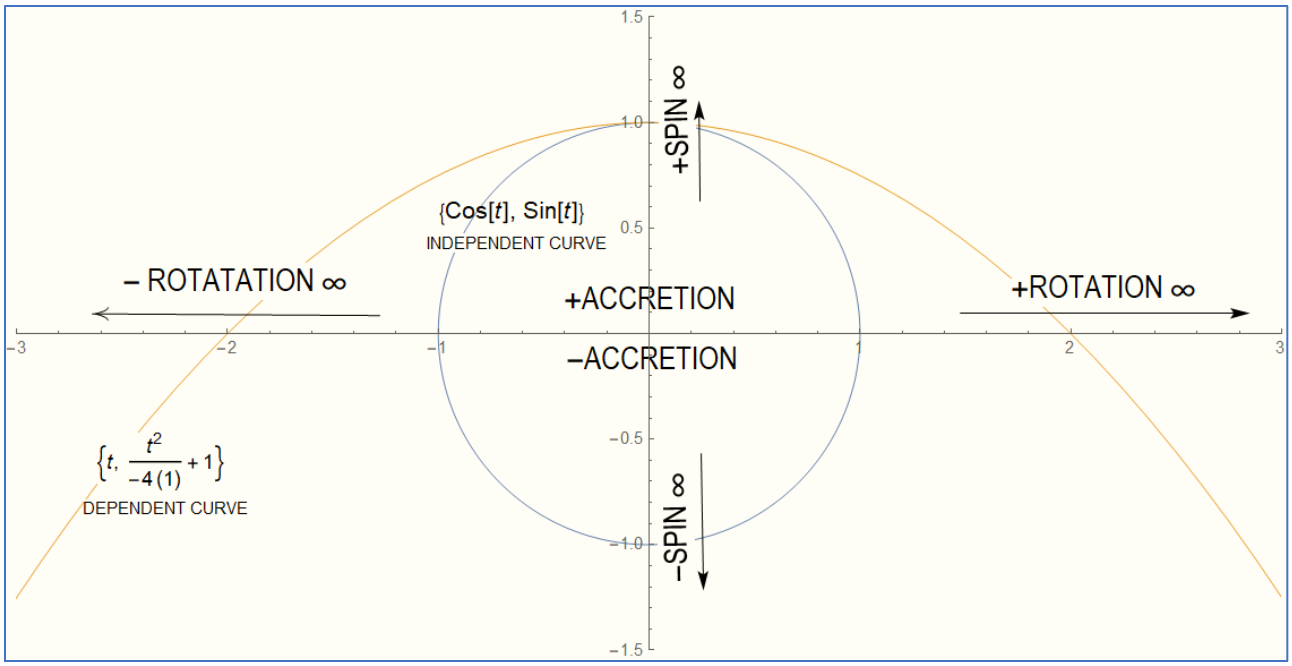

Figure 1: Basic **CSDA** construction spin/rotation space of M_1. Signing is Cartesian. Since any snapshot freeze frame is congruent with any other snapshot freeze frame, I designate energy tangent slope event ±1@ quadrant 1 on dependent CSDA curve as center of parametric analysis.

CSDA independent M_1 unity curve (1radius unit) as potential and dependent M_2 curve as motive energy $(f(r))$ where 2(r) of square space is Sir Isaac Newton's displacement radius.

Protocol: even indices; $\pm(\sqrt[2]{2})$ as standard model of parametric analytics

1. $\pm$(MBS): Main Body Solution Curves $\{t, \frac{t^i}{-2} + \frac{n}{2}\}, \{t, \frac{t^i}{+2} - \frac{n}{2}\}$ always pass through field spin axis endpoint (N, S) before searching for root. Let the one passing through N be the (red) negative curve and the curve passing through S be (blue) positive curve.

$$\text{ParametricPlot}[\{\{\text{Cos}[t], \text{Sin}[t]\}, \{t, \frac{t^2}{-4(1)} + 1\}, \{\sqrt{2}, t\}, \{-\sqrt{2}, t\}, \{t, \left(\frac{t^2}{-2} + \frac{2}{2}\right)^{-1}\}, \{t, \left(\frac{t^2}{+2} - \frac{2}{2}\right)^{-1}\}, \{t, (\frac{t^2}{-2} + \frac{2}{2})\}, \{t, (\frac{t^2}{+2} - \frac{2}{2})\}\}, \{t, -4, 4\}, \text{PlotRange} \to \{\{-4, 4\}, \{-3, 3\}\}]$$

Even indices ±MBS curves: have three happenings when inversed.

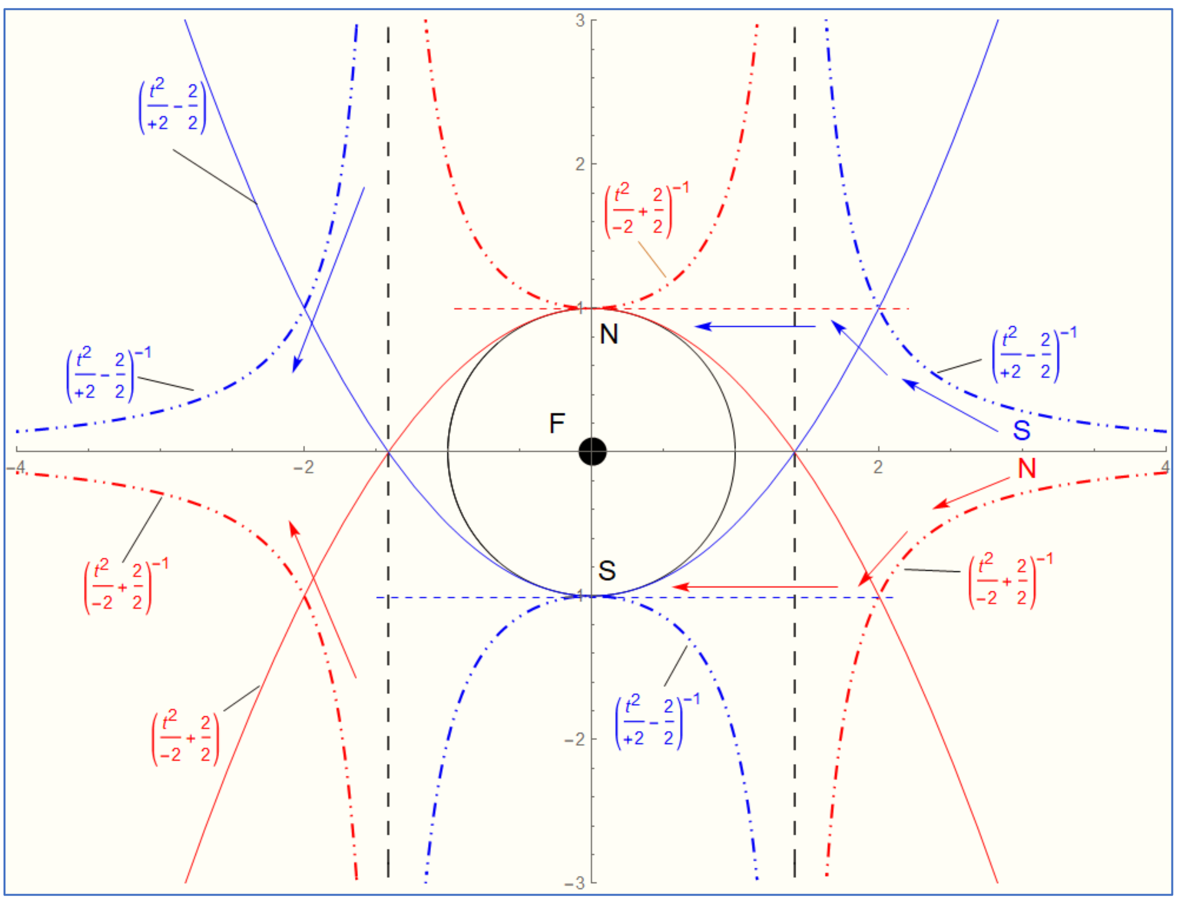

Figure 2: basic CSDA construction of ±MBS solution curve $(\sqrt[2]{2})$, abscissa ID of $(\sqrt[2]{2})$, and inversed MBS^{-1} $(\sqrt[2]{2})^{-1}$ with vector distribution of ISM Plasma.

$-\mathrm{MBS}^{-1}\left(\frac{t^2}{-2}+\frac{2}{2}\right)^{-1}$ is sourced from $-\mathrm{MBS}\left(\frac{t^2}{-2}+\frac{2}{2}\right)$ and share same N spin vertex. These curves are negative field curves colored red.

$-\mathrm{MBS}\left(\frac{t^2}{-2}+\frac{2}{2}\right)$ is solid red line and $\mathrm{MBS}^{-1}\left(\frac{t^2}{-2}+\frac{2}{2}\right)^{-1}$ is hash double dot red line.

Let <u>all</u> $\pm\mathrm{MBS}^{-1}$ inversed curves leftside (—abscissa) ID of roots solution curves be electric potential of ISM Plasma. All MBS^{-1} inversed curves rightside (+abscissa) ID be magnetic curl of ISM Plasma electric potential.

Note $\pm\mathrm{MBS}^{-1}$ *principal* curves are locked between ±abscissa root ID. $-\mathrm{MBS}^{-1}$ $\left(\frac{t^2}{-2}+\frac{2}{2}\right)^{-1}$ occupy Quad 1&2; $+\mathrm{MBS}^{-1}\left(\frac{t^2}{+2}-\frac{2}{2}\right)^{-1}$ reside in Quad 3&4. Identity of inversed *principal* curves $\pm\mathrm{MBS}^{-1}$ are determined with field spin polarity. —Red is N and +blue is S.

The *principal* red <u>N</u> $\mathrm{MBS}^{-1}\left(\frac{t^2}{-2}+\frac{2}{2}\right)^{-1}$ has three aparitions. Quadrant (1 and 2) have *principal* red N vertex $-\mathrm{MBS}^{-1}$. Quadramt (3) is −electric potential and quadrant (4) has N magnetic curl of $-\mathrm{MBS}^{-1}$ posessed by (−electric potential) of ISM Plasma.

The *principal* blue <u>S</u> $+\mathrm{MBS}^{-1}\left(\frac{t^2}{+2}-\frac{2}{2}\right)^{-1}$ has three aparitions. Quadrant (3 and 4) have *principal* blue S vertex $+\mathrm{MBS}^{-1}$. Quadramt (2) is +electric potential and quadrant (1) has S magnetic curl of $+\mathrm{MBS}^{-1}$ posessed by (+electric potential) of ISM Plasma.

The blue <u>S</u> $+\mathrm{MBS}^{-1}\left(\frac{t^2}{+2}-\frac{2}{2}\right)^{-1}$ happening in quad2 has down spin electric potential approaching plane of rotation from + ISM spin space, on negative side of (—abscissa) ID, on positive side of accretion, receeding along (—rotation) infinity.

The red <u>N</u> $-\mathrm{MBS}^{-1}\left(\frac{t^2}{-2}+\frac{2}{2}\right)^{-1}$ happening in quad3 has up spin electric potential approaching plane of rotation, on negative side of (—abscissa) ID, on negative side of accretion, receeding along (—rotation) infinity.

Both N&S curves representing magnetic curl of electric field potential aproach positive side of (+root abscissa) ID. −MBS^{-1} red magnetic curl $\left(\frac{t^2}{-2}+\frac{2}{2}\right)^{-1}$ happens in Quad 3 and +MBS^{-1} blue magnetic curl $\left(\frac{t^2}{+2}-\frac{2}{2}\right)^{-1}$ happens in Quad 1.

Red N −MBS^{-1} $\left(\frac{t^2}{-2}+\frac{2}{2}\right)^{-1}$ magnetic curl approaches +abscissa ID on plane of rotation on negative side of accretion. Curl stops at S vertex curvature evaluation (curved space directrix) and connects with S pole of field spin. N curl with S pole.

Blue S +MBS^{-1} $\left(\frac{t^2}{+2}-\frac{2}{2}\right)^{-1}$ magnetic curl approaches +abscissa ID on plane of rotation on positive side of accretion. Curl stops at N vertex curvature evaluation (curved space directrix) and connects with N pole of field spin. S curl with N pole.

Protocol: odd indices; $\pm(\sqrt[1]{2})$ as standard model of parametric analytics

Let main body solution curves for $\left(\pm\sqrt[1]{2}\right)$ be :

$$\boxed{\{t,\frac{t^1}{-2}+\frac{2}{2}\},\{t,\frac{t^1}{+2}-\frac{2}{2}\}}$$

Let these curves be inquiry parametric geometry solution curves for $\pm\sqrt[1]{2}$.

±(MBS): Main Body Solution Curves $\{t,\frac{t^i}{-2}+\frac{n}{2}\},\{t,\frac{t^i}{+2}-\frac{n}{2}\}$ always pass through field spin axis endpoint (N, S) before searching for root. Let the one passing through N be the (red) negative curve and the curve passing through S be (blue) positive curve.

$$\boxed{\begin{array}{c}\text{ParametricPlot}[\{\{\text{Cos}[t],\text{Sin}[t]\},\{t,\frac{t^2}{-4(1)}+1\},\{t,\frac{t^2}{+4(1)}-1\},\{\sqrt[1]{2},t\},\{t,\frac{t^1}{-2}+\frac{2}{2}\},\\ \{t,\frac{t^1}{+2}-\frac{2}{2}\},\{t,(\frac{t^1}{+2}-\frac{2}{2})^{-1}\},\{t,(\frac{t^1}{-2}+\frac{2}{2})^{-1}\}\},\{t,-2\pi,2\pi\},\text{PlotRange}\to\{\{-6,6\},\{-6,6\}\}]\end{array}}$$

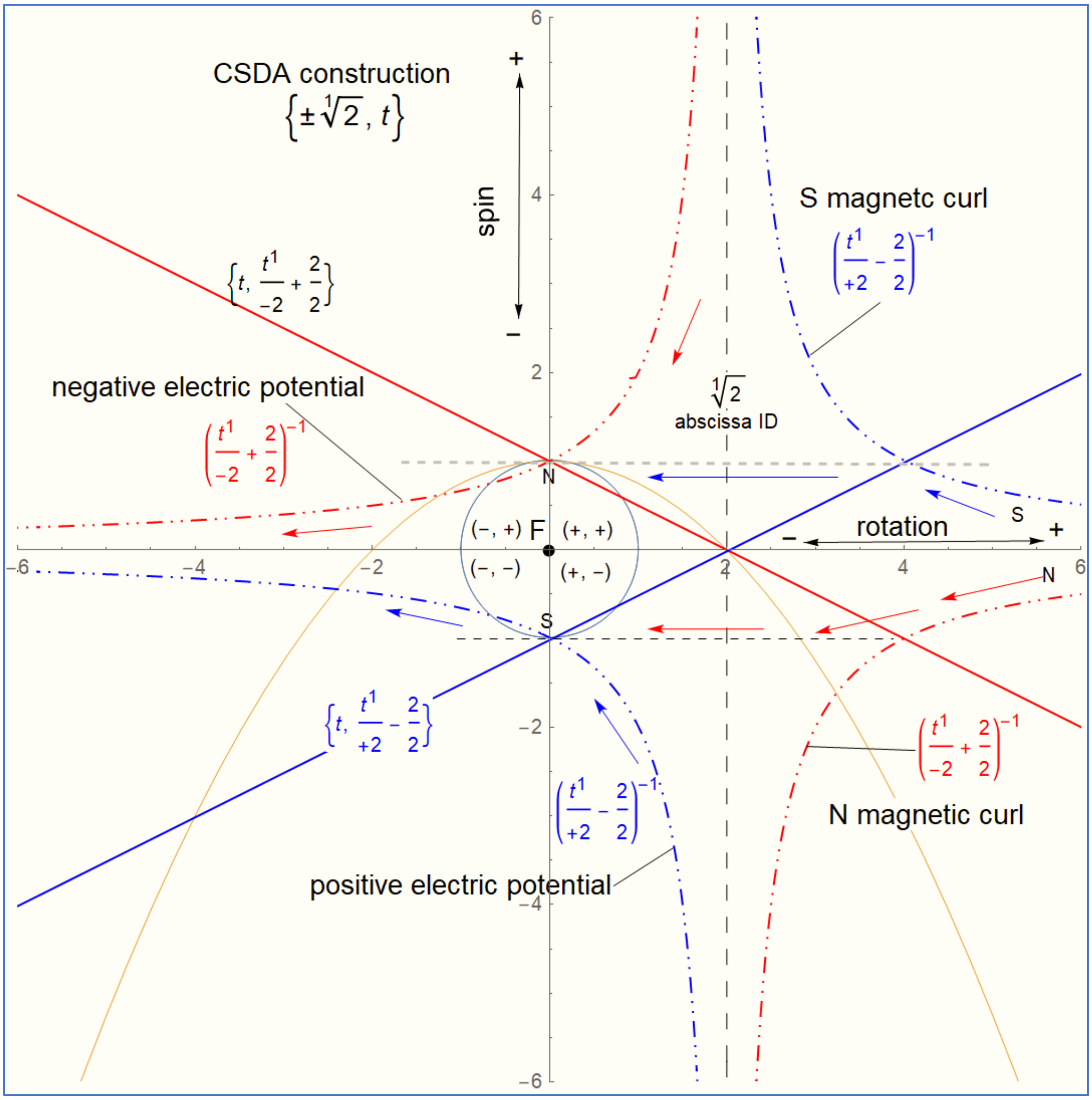

Figure 3: space roots.nb

$-\left(\frac{t^1}{-2}+\frac{2}{2}\right)^{-1}$ is sourced from −MBS $\left(\frac{t^1}{-2}+\frac{2}{2}\right)$ and share same spin vertex (N). These curves are negative field curves colored red.

$\left(\frac{t^2}{-2}+\frac{2}{2}\right)$ is solid red line and —MBS^{-1} $-\left(\frac{t^2}{-2}+\frac{2}{2}\right)^{-1}$ is hash double dot red line.

Let <u>all</u> ±MBS^{-1} inversed curves leftside (—abscissa) ID of roots solution curves be electric potential of ISM Plasma. All ±MBS^{-1} inversed curves rightside (+abscissa) ID be magnetic curl of ISM Plasma electric potential.

Note ±MBS^{-1} $\left\{t,\left(\frac{t^1}{-2}+\frac{2}{2}\right)^{-1}\right\},\left\{t,\left(\frac{t^1}{+2}-\frac{2}{2}\right)^{-1}\right\}$ inversed curves are are connected with polarity assignment of source ±MBS $\left\{t,\frac{t^1}{-2}+\frac{2}{2}\right\},\left\{t,\frac{t^1}{+2}-\frac{2}{2}\right\}$. —Red is N and +blue is S.

Both ±MBS (main body solution curves come from negative spin infinity. Cross into +spin space at spin diameter endpoints of **F**. $\left\{t,\frac{t^1}{-2}+\frac{2}{2}\right\}$ crosses into +spin space via N polarity and is negative red. $\left\{t,\frac{t^1}{+2}-\frac{2}{2}\right\}$ crosses into +spin space at S M_1 polarity and is a blue positive curve.

The −MBS $\left\{t,\frac{t^1}{-2}+\frac{2}{2}\right\}$ (red main body solurion curve) has two aparitions. Quadrant (1&2) has red N vertex −MBS^{-1} $\left(\frac{t^1}{-2}+\frac{2}{2}\right)^{-1}$ is −electric potential and quadrant (4) has N magnetic curl of −MBS^{-1} posessed by (−electric potential) of ISM Plasma.

The +MBS $\left\{t,\frac{t^1}{+2}-\frac{2}{2}\right\}$ (blue main body solurion curve) has two aparitions. Quadrant (3&4) has blue S vertex +MBS^{-1} $\left(\frac{t^1}{+2}-\frac{2}{2}\right)^{-1}$ is +electric potential and quadrant (1) has S magnetic curl of +MBS^{-1} $\left(\frac{t^1}{+2}-\frac{2}{2}\right)^{-1}$ posessed by (+electric potential) of ISM Plasma.

The blue <u>S</u> +MBS^{-1} $\left(\frac{t^1}{+2}-\frac{2}{2}\right)^{-1}$ has up spin electric potential approaching plane of rotation from −ISM spin space happening in quadrant (3&4) on negative side of (abscissa) ID, on negative side of accretion, receeding along (—rotation) infinity.

The red <u>N</u> −MBS^{-1} $\left(\frac{t^1}{-2}+\frac{2}{2}\right)^{-1}$ has down spin electric potential approaching plane of rotation happening in quadrant (1&2), on negative side of (—abscissa) ID, on positive side of accretion, receeding along (—rotation) infinity.

Both N&S curves representing magnetic curl of electric field potential aproach positive side of (+root abscissa) ID. −MBS^{-1} $\left(\frac{t^1}{-2}+\frac{2}{2}\right)^{-1}$ red magnetic curl happens in Quad 4 and +MBS^{-1} $\left(\frac{t^1}{+2}-\frac{2}{2}\right)^{-1}$ blue magnetic curl happens in Quad 1.

Red N −MBS^{-1} $\left(\frac{t^1}{-2}+\frac{2}{2}\right)^{-1}$ magnetic curl approaches +abscissa ID on +plane of rotation on negative side of accretion. Curl stops at S vertex curvature evaluation (curved space directrix) and connects with S pole of field spin. N curl with S pole.

Blue S +MBS^{-1} $\left(\frac{t^1}{+2}-\frac{2}{2}\right)^{-1}$ magnetic curl approaches +abscissa ID on +plane of rotation on positive side of accretion. Curl stops at N vertex curvature evaluation (curved space directrix) and connects with N pole of field spin. S curl with N pole.

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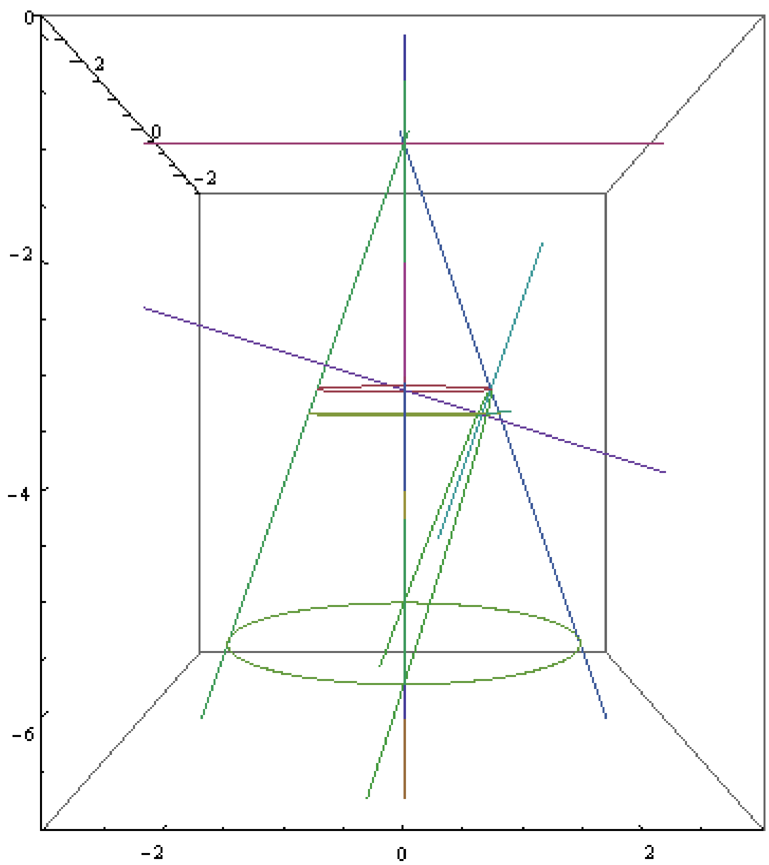
Sand Box Geometry LLC, a company dedicated to utility of Ancient Greek Geometry in pursuing exploration and discovery of Central Force Field Curves.

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.

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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

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 energy curves when we explore changing acceleration phenomena.

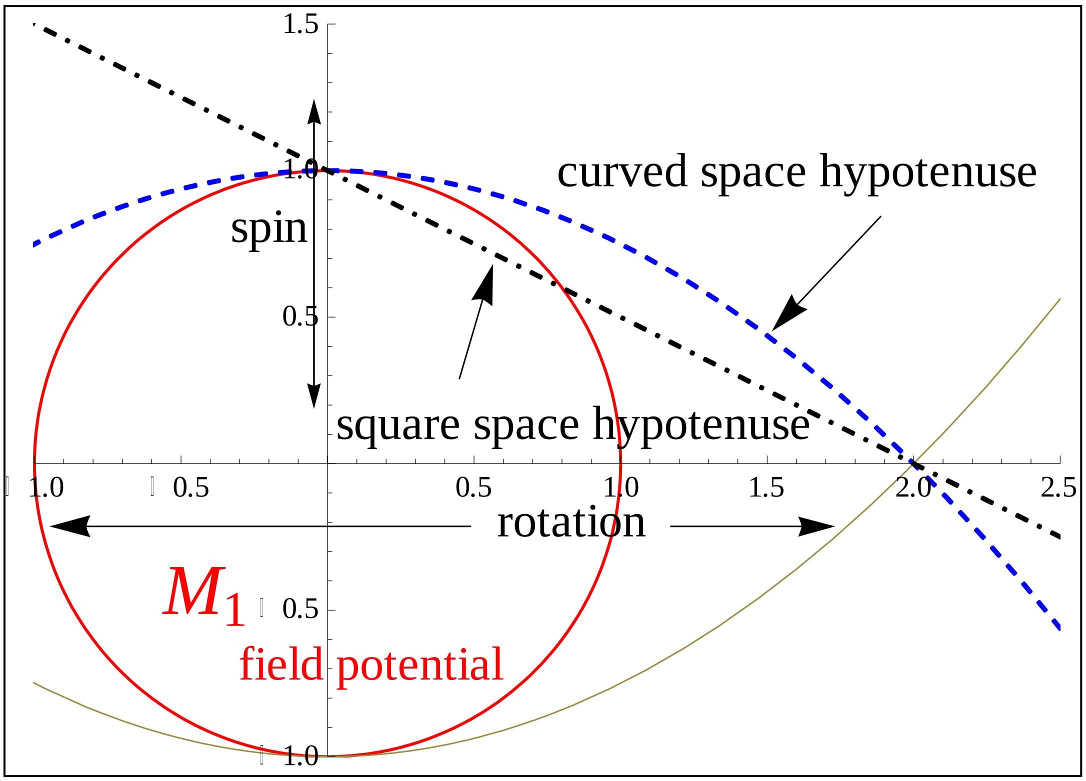

Figure 4: CSDA demonstration of a curved space hypotenuse and a square space hypotenuse together.

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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