Duo curve analytics of a parabola: a comparative for secondary education discovery of complexity of Differential Geometry of curves and Parametric Dynamic GeoGebra demonstrating simple Geometry of Thales analytic curves applied to Curvature and Radius of Curvature used exploring Central Force Mechanical Energy Curves.

GeoGebra Demonstration

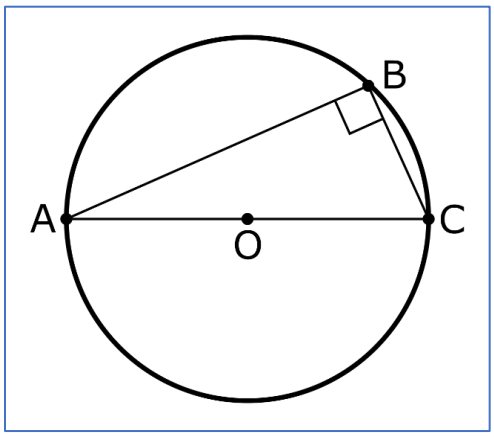
June 1
2019

The meter of Parabola Curvature Analytics has two approaches. Two type of analytics are in use. Today's current Differential Geometry is a college level exploratory on changing curvature and osculating radius of curvature following a point on a parabola curve. Using differential geometry of a parabola as an energy curve explanatory for Sir Isaac Newton's changing acceleration mechanics of a Gravity Field leaves a lot to be desired, in other words, in today's colloquialism, it's a nothing burger. It is, however, a great mental gymnastics exercise in Differential Analytics. As usual, the Greeks were there first. Thales of Miletus making relative a right triangle hypotenuse with a diameter fits perfect as means to make dynamic changing energy curves imagined by Sir Isaac Newton.

Thales of Miletus nails it!

https://en.wikipedia.org/wiki/Thales%27s_theorem

In geometry, **Thales's theorem** states that if A, B, and C are distinct points on a circle where the line AC is a diameter, then the angle ∠ABC is a right angle. Thales' theorem is a special case of the inscribed angle theorem, and is mentioned and proved as part of the 31st proposition, in the third book of Euclid's *Elements*.[1] It is generally attributed to Thales of Miletus, who is said to have offered an ox (probably to the god Apollo) as a sacrifice of thanksgiving for the discovery, but sometimes it is attributed to Pythagoras.



motion.ggb

Parametric geometry and mechanical orbit curves

(motion; 2018);

https://www.geogebra.org/u/apollonius

the following information may be needed depending on where you happen to enter GeoGebra Cloud.

Enter E8ZCZ on

www.geogebra.org/groups

to join.

https://www.geogebra.org/u/apollonius

https://www.geogebra.org/u/apollonius

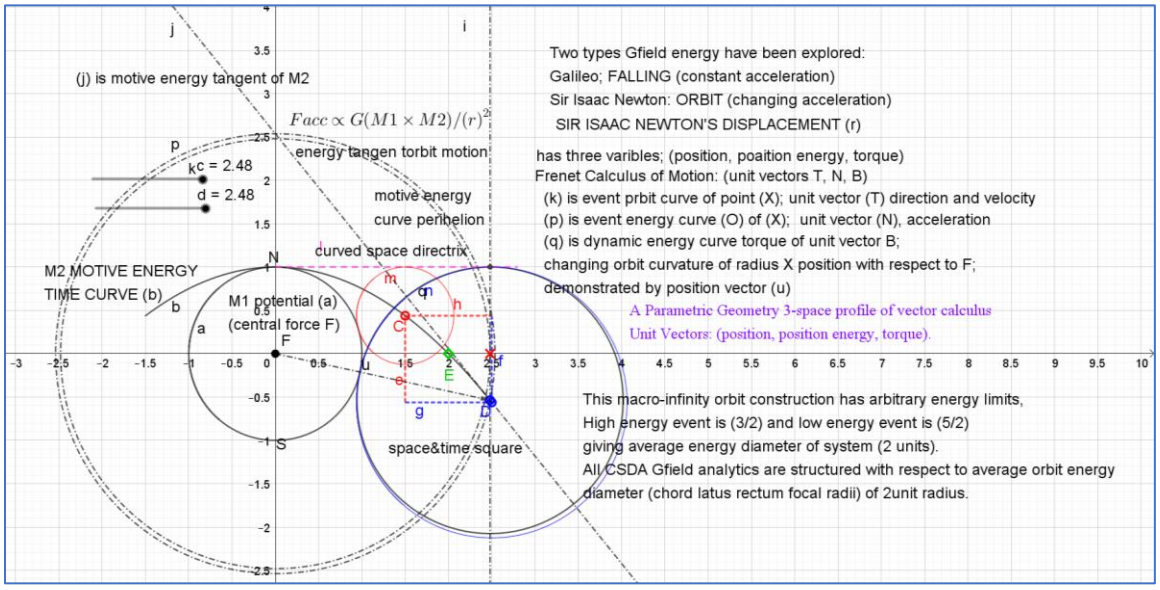
Gfield orbit
CSDA.GGB

- MASSIVE GRAVITY FIELD ENERGY CURVES: Two types of Gfield energy are observed. (Gfield orbit CSDA, 2018 STEM)
  - Falling (curved and straight to center) Studied by Galileo (constant acceleration).
  - (stable curves of orbit) Studied by Sir Isaac Newton, (changing acceleration).

Geometry of Sir Isaac Newton's displacement radius has two variables $(r \text{ and } f(r))$ giving us a 3-space calculus Cartesian presentation (three motion vectors Frenet). $([T], [B], [N])$
https://en.wikipedia.org/wiki/Frenet%E2%80%93Serret_formulas :

- Unit Vector [***T***]: Let his square space displacement radius (r), be point (X); *a unit vector with* orbit direction & velocity (**T**), *with respect to* M_1, *into the paper*.
- Unit Vector [***B***]: system acceleration, Unit Vector [***B***], alter curved space motive energy $(f(r); pt.O)$ of point (X); *changing orbit curve & velocity metered with system dynamic energy tangent slope.*
- Unit Vector [***N***]: *is dynamic curve (q); acceleration torque changing M_2 curvature , demonstrated with dynamic vector* (***u***).
- *Dynamic energy abscissa (**i**) keeps orbit (position, position energy) of* M_2&M_1 *relative*.

This **CSDA** orbit construction has arbitrary energy limits, High energy event is (3/2) and low energy event is (5/2) giving average energy diameter of system (2 units). All **CSDA** Gfield analytics are structured with respect to average orbit energy diameter (+endpoint 2 on chord latus rectum of dependent curve) giving us a standard model for orbit energy curves, centered@+2 of space and time square (e,f,g,h) at etangent slope event $(m = \pm 1)$.

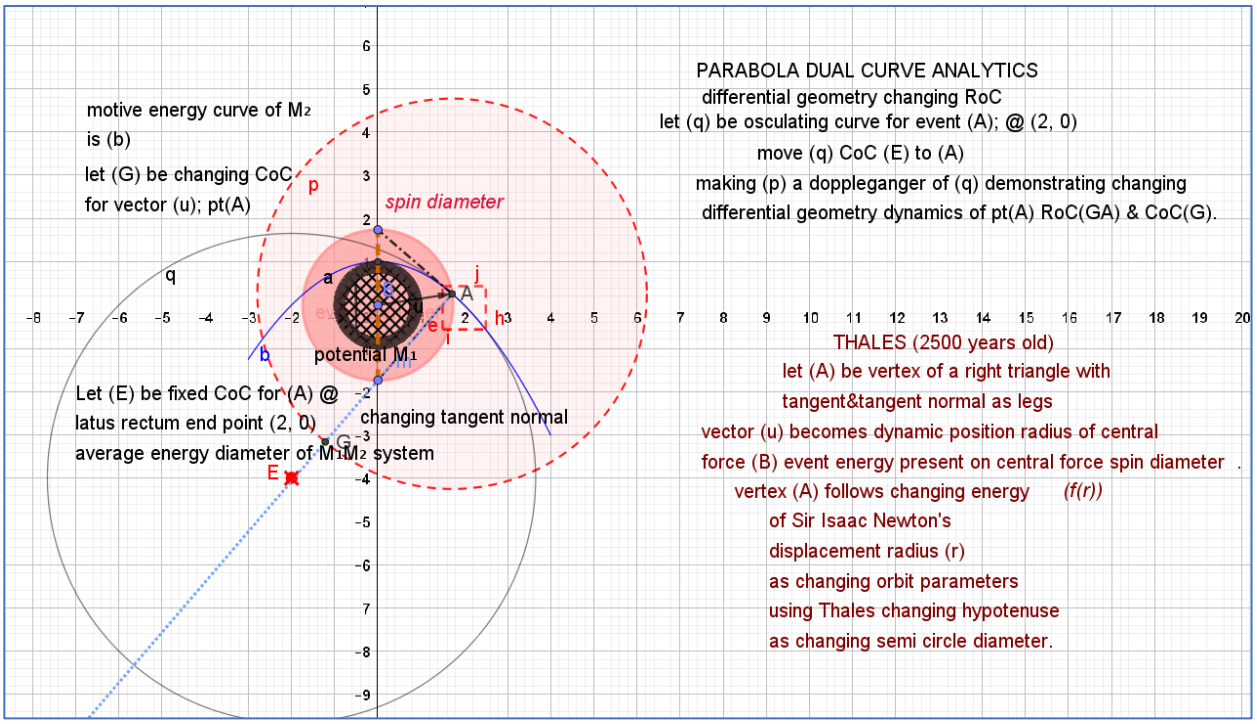


motion.ggb

(2018)

ENERGY CURVES ACCELERATION SPHERE OF INFLUENCE (ASI)

(Thales; 2400 years) Let vector (**u**) be a central force position vector. As such, vector (u) points to a right triangle vertex as we know a tangent and tangent normal happen to be. This identifies position vector (**u**) as centering radii on hypotenuse diameter of new energy curve (definitive **ASI**) Acceleration Sphere of Influence, pink circle Thales changing event diameter from vector (**u**). Potential is the principal (**ASI**; M_1) of the system.



Dynamic Demonstration on GeoGebra Cloud:

https://www.geogebra.org/u/apollonius

End:

ALΣXANDΣR; CEO SAND BOX GEOMETRY LLC