(1)Hello world: The squaring of time. I've often wondered about that phrase 'squaring of time'. I know, everyone tells you; look it's just units. Take it, square it, and be done with it. But time is not an ordinary unit. For me, a unit is a self-contained entity. Real time has two parts. A beginning and an end, a start a finish. When we square time as a unit, there's a whole bunch of happening between the beginning and its end it's start, it's finish. I just can't gloss over that.

(2) But, before I start, I want to put forth something that I've had in the back of my mind for a very long time. This is my opined imagination at work. I am a firm believer that there are three space and time squares comprising the human knowledge base.

Slide(3): Here are the space-time squares I imagine. I have contrived the parametric geometry expressing all three as one construction, however when we study central force mechanical energy curves of one, two are obscured.

Spacetime one belongs to Galileo, the science of uniform acceleration, kinematics. Space-time 2 belongs to Sir Isaac Newton, defining calculus for the period time curves of our planet group. Space-time three is a collective endeavor. It started in the middle 19th century when Carnot and Clausius worked problems with steam engine efficiency. Early 20th century saw an explosion in research and understanding of the quantum world. I include the marvelous arithmetic progression of elements given us by Mendeleev. These combined happenings I call quantum thermodynamics, transition of elements, what happened when atoms sweat or become very, very, cold.

Space-time one is the source provenance of all space times to come. It was pure brilliance of Galileo and Descartes. Galileo's algebraist imagination and Descartes analytic geometry, that fired the first second space-time tile.

Slide(4): space and time squares the meter of motion and time.

I explore the mechanical energy of three types of space-time. Falling in a uniform acceleration field (constant acceleration), period time curves of planetary motion (changing accelerations), and heat chaos in the quantum world. I call the tool I use to explore ME of space time squares a Curved Space Division Assembly, acronym **CSDA**. I use a **CSDA** to construct parametric geometry dynamics for all three natural S&T's of our knowledge base.

Slide5: This is my basic **CSDA**. I use calculus terms. We have an independent curve, which is the unit circle, and the dependent curve I call the unit parabola. The reason for the moniker unit parabola is the initial focal radius of the parabola is radius of the unit circle congruent. Their congruence is found on the $(\pi/2)$ spin RADIUS.

two reasons for division of space into two separate infinities would be to acquire a unifying geometry for small space quantum mechanics and big space classic mechanics of Sir Isaac Newton. The other reason would be two infinities bring into play the parametric geometry of curvature and radius of curvature, a required metric linking curve space with square space.

The unit circle serves as boundary between both infinities. All the content within the unit circle is the mass volume essence of (M_1). That content outside the unit circle belongs with (M_2). My **CSDA** also brings utility of two hypotenuses. One from square-space, our 2000 plus years Pythagorean Hypotenuse and a curved space hypotenuse.

Slide(6) I want to spend some time with this construction. Let me say this about right triangles. Right triangles are the geometric foundation of our civilization. We humans are a right triangle species of intelligence. I have been trying to point out for well over 10 years the existence of two hypotenuses. One for curved space and the one given us by Pythagoras for our squarespace.

Slide7: READ SLIDE INTRO. Galileo 's S&T1 has two diagonals, one linear freefall diagonal and one curved diagonal. I will be working with the curved diagonal labeled surface acceleration curve of the earth. Not to be confused with the surface curve of the earth as this curve is not composed of mountains oceans deserts, it is purely an acceleration field, a surface acceleration curve of planet earth. However, terminal velocity of fall hits hard, the S&T1 boundary of infinities cannot be crossed. There are plenty of surface acceleration curves in our system. All the planets are surface acceleration curves with respect to their moons. NASA counts 290 traditional moons, 462 small body type moons, or 752 (M_2) type events in our neighborhood.

Surface Acceleration squares are a parametric geometry function and do not define points in space as a function range and domain, but meter intensity of central force accelerations by distributing time as seconds removed ***from*** the surface curve of M_1 making 'how-high' a metered effort using time as range. (D) is not a point located at $(1,\ 1)$ on a Cartesian Plane, but position in central force field space of (M_1). In fact (D) is 1 second removed from surface acceleration curve of **F**.

Metered intensity makes each spacetime tile, of the Euclidean SpaceTime Frame, relative with the 1st second experience of the field from which the 1st unit SpaceTime Tile is derived.

If this S&T Square happened to be 1st second free fall experiment for our Earth, 1 unit of free fall space would be 16ft. AKA Curved Space Coordinates: $(one\ unit\ space 16ft.(domain),\ one\ unit\ time 1s\ (range))$. So, we would have for the first second tile of our planet earth curved space coordinates:

$$(16feet, 1\ second)$$

His incline plane established domain(Space) and range(Time) as a collection metered with tempo. One unit time for each beat and THE meter of collated space with each happening. With Galileo's 1st second tile for our Earth metered up, we can begin constructing a Euclidean Space&Time Frame for Galileo's S&T1 Surface Acceleration curve for our Earth. No numbers yet, just 1sec time.

Slide8: Beat2; Second2, the Squaring of Time Curve(2)

Listening to adjusted interruptions, he was able to divide the increasing fall length into precise sectors of space and time.

The 1st second interruption is arbitrary. Second #2 is comparative and carries a different length of space with respect to sec#1. Second#2 interrupter adjustment with second#1 happening, provides a matched tempo. He noticed the change of meter between s#1 and s#2. S#1 measured 1unit space. S#2 measured 3unit space. He needed 3 more tiles to fill his spacetime square. Placement of the tiles is important. Clockwise placement is what I follow. To cover range from second #one to second #two, we place the first tile of the three additionals, at time curve 2 to span the time needed between second one and second 2. The next tile is a diagonal tile, placed at the remote corner of tile1. The final tile is placed on the domain. We have completed the square of time curve 2.

Slide9: Beat3; Second3, Squaring Time Curve(3).

Second #3 continues the beat of space*and*time, melding space with time for our 1st ***ever*** Central Force Field inquiry.

Once he had roll space per unit time, he only had to sum collated distance to meter cost of 1st second tiles needed to rise above surface acceleration curve of Earth per units of time.

If we are removed 3 seconds from surface acceleration curve Earth, square units of time to aquire analytical cost in tiles needed to gain 3sec's height above surface curve Earth. $(3^2 = 9,\ tiles\ required)$

Galileo's 3rd interruption requires 5 more units of 1st second spacetime tiles to climb to the remote corner of $(time\ curve\ 3^2)$ to complete our square space Eucldean time frame.

Clockwise placement of the tiles is important. To cover time difference of second #two to second #three, we place tile(5) of the time $curve3^2$ set, at range of time curve(3) connecting second(2) with second(3). Tile(7) is the diagonal placement positioned at the remote corner of time curve$(2)^2$. The final tile, tile(9), is placed on the domain. We have completed the square of time curve(3).

Terminal velocity of free fall return energy: SECOND(3).

$$\left(freefallv = \frac{dt}{ds}(t^2); which\ will\ give\ us\ for\ \sec(3) = 6 * 16 = 96ft/s\right).$$

Height above: time curve(3): ($(time)^2$* 1st sec domain)

$$(height\colon 3^2 * 16 = 144feet)$$

Part 2; parametric geometry of period time curves and energy tangents.

(10) I want to talk a bit about curved space mechanical energy curves and their energy tangents.

Let's take a look at period (time and energy) curves and their tangents in Galileo's S&T1 out to time curve 4.

Energy Units.

To reach a remote corner of a squared time field sourced from a Uniform Acceleration surface curve has cost involved. I compute cost using enumerated first second tiles as energy units needed to build a Euclidean spacetime frame.

Let S&T1 be the first second tile. Let the cost of this tile be one unit energy. Then, tile #7 would have a cost of seven energy units.

This arrangement works very well with Galileo's S&T1. A simple means to define cost of placement tiles in a Euclidean spacetime frame. Essentially the means to express work as cost. Whether you lift an item yourself, use a mechanical jack, or have the good fortune of anti-gravity machines, to lift in a uniform acceleration field is work.

(Lift)Period time curves and their tangents.

(Lift) period time curves start as flat line curves from central force **F**. Let such curves be labeled initial. The curves are open. They vary in openness only in cost of time as 'final' placement in Euclidean 'time place' in square space. Let lift be a continuous command. No discontinuity in these period time curves, a continuous run from initial zero slope to final time place.

Flatline 0 slope in a central force indicates rest energy, no work being done.

to reach the remote corner of time curve$(4)^2$ in a Euclidean time frame, requires 16 first second tiles. Sequential placement of enumerated first second tiles of a time$(\text{curve})^2$ is mandatory. Enumerated tiles of sequential placement do not repeat. Each set of a sequential time$(\text{curve})^2$ operation will have basic number line counting integers with no repeats. Each time$(\text{curve})^2$ operation, is a sequential 'odd number' assignation, making tile cost an odd number sum/unit time.

By calibrating beats of a rolling object down an incline plane, Galileo found that fall rate is a continuous sum of odd numbers/units time = to the square of time.

the first tile in time curve$(4)^2$ set is tile number 10. Let Tile number 10 bridge time curve three with time curve 4. Tile 13 is the diagonal tile linking time curve$(4)^2$ with time curve$(3)^2$.

We have completed squaring time curve(4).

Finding ID of diagonal tiles.

Here we are at time curve 3 we square time curve(3) which will be 9 tiles required for my Euclidian time frame. The diagonal tile for time curve$(3)^2$ will be 9 tiles take away time curve 2 giving us tile #7 as diagonal.

Diagonal tile(s) unit ID is found with this method:

time curve^2 minus previous time curve = diagonal tile ID.

Diagonal tile for time curve(5) will be 5 ^2 - 4 giving us tile number 21.

Uniform Acceleration energy curves change shape to accommodate height/unit time.

What remains constant is the connection of an energy tangent with its energy curve for uniform acceleration fields. such event(s) are ±2 slope.

Energy tangents creep ½ step along the domain of **F** for each time place required, whereas the period curves source as flat line (0)slope from (**F**) as provider of both system potential and system escape energy to a specific Euclidean time place.

the remote corner of a Euclidean space-time frame requires a slope two event to exist. Slope(2) events unite degree(2) period time curves with their linear tangent.

Euclidean time frame slope(2) events provide a congruent parametric geometry connecting curved space energy requirements (degree(2) period curves with linear tangent square space physical requirements of where to find a displacement time-place above a surface acceleration curve. S&T1 spacetime happenings in Galileo's Uniform Acceleration Euclidean Space Time Frame are a slope ±2 event.

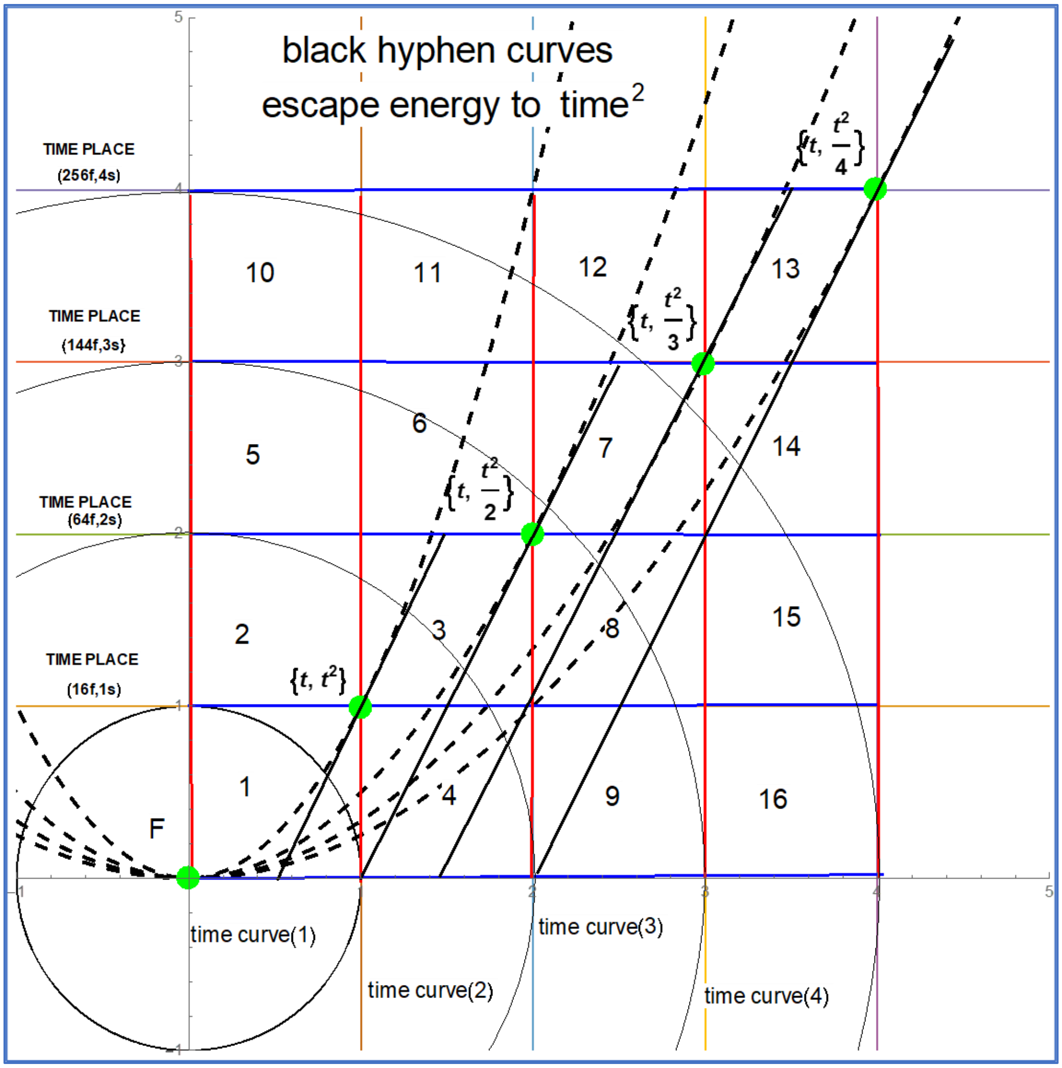
(Fall)Period time curves and their tangents

Lift and falling after lift.

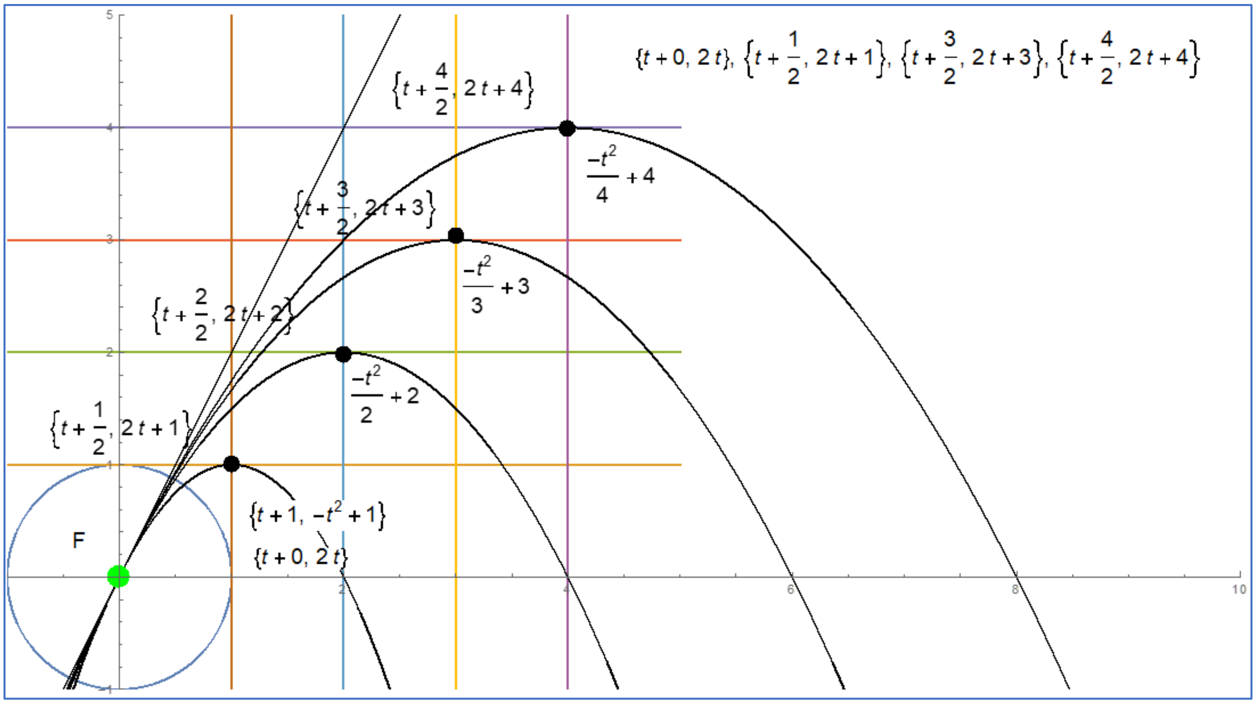
First thing to note when falling from a Euclidean time frame, time place, is each time place sits on flatline 0slope. This is that happening when something goes up, it stops at maximum height of expended energy before falling.

Let's begin fall to the left side of each curve. Note, falling period time curves do not have their own dedicated tangent, but fall toward one single energy tangent.

That tangent is ±2 slope reclamation energy event tangent connected with central force **F**.



time	Free fall accumulation of unit space →								
1 sec	1sec	2nd unit	3rd unit	4th unit	5th unit	6th unit	7th unit	8th unit	9th unit
2 sec	3 more units space(3+1=4; or (2nd second)^2								
3 sec	5 more units space (1+3+5=9; or (3sec)^2								
4 sec	7 more units space (1+3+5+7=16; or (4sec)^2								
5 sec	9 more units space (1+3+5+7+9=25; or (5sec)^2								


{t + 0, 2 t}, {t + 1/2, 2 t + 1}, {t + 3/2, 2 t + 3}, {t + 4/2, 2 t + 4}
{t + 4/2, 2 t + 4}
−t^2/4 + 4
{t + 3/2, 2 t + 3}
−t^2/3 + 3
{t + 2/2, 2 t + 2}
−t^2/2 + 2
{t + 1/2, 2 t + 1}
F
{t + 1, −t^2 + 1}
{t + 0, 2 t}