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Navier-Stokes Clay Institute Millenium Problem Solution

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Abstract: *Here is a paper that provides the solution to the Navier-Stokes Clay Institute Problem. The Golden Mean parabola is a solution to this equation. The solution shows that the Navier Stokes Equation is smooth.*

1. Introduction

In three space dimensions and time, given an initial velocity field, there exists a vector velocity and a scalar pressure field, which are both smooth and globally defined, that solve the Navier–Stokes equations.

2. The Navier Stokes Equation

Rho[du/dt+u* del u]=Del * sigma +F

Rho=density

Du/dt=velocity

U=position

Del=gradient

Del sigma=Shear

F=all other forces

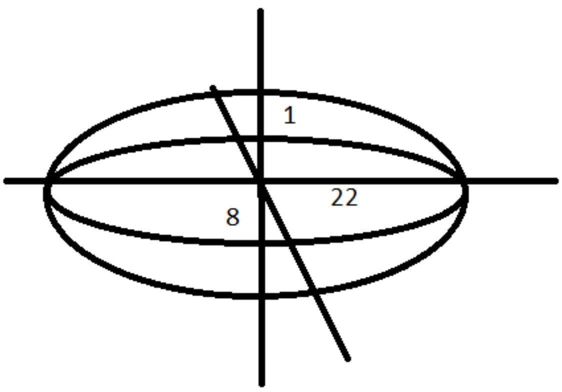
[FLUID DYNAMICS AND THE NAVIER-STOKES EQUATION, S DOBEK, 2012]

The solution to this equation is the root of the Golden Mean Equation where the variable is t time. G.M.=1.618
First, let's break down the components as follows.

Density=rho

Rho=M/Volume

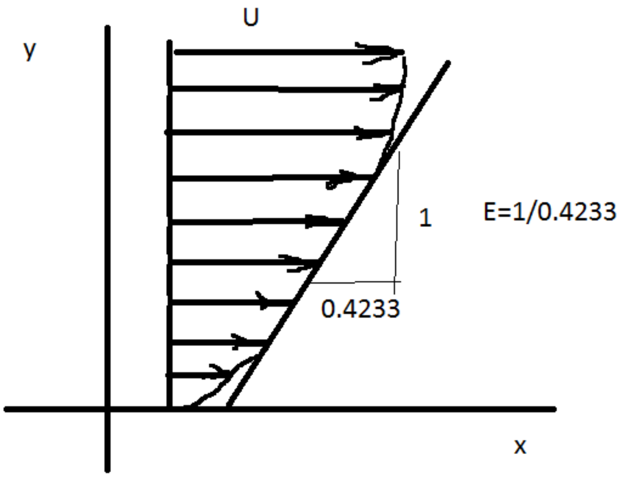
For an ellipsoid with axis 1 x 8 x 22 (or 3 x 24 x 66) has a volume of 19905 and a Surface Area of 1.



Ellipsoid

Mass M= 1/c^4

Here is how.



Strain=sigma/E

E=1/0.4233=1/(Pi-e)

Lim x➔ 0 (strain) =d delta/dt

D=E * sigma’

=1/0.4233* (P’/A”)

P is constant

A’=circumference=2Pi R

Let R=1/2

A=(PiR^2)’=2Pi (R=Pi

Delta=1/ (0.4233)* P/ Pi

P=(2* s)=(2* 4/3)=8/3=2.667

Delta=2.022

=Y=e^-t* cos t

=dM/dt

2.02=e^(-t)(-sin t)

Solving for t:

Sin t=2 rads

T=114.59 degrees

Substituting:

E^(-2) (sin 2)

=1/81

=1/c^4

“c” is a fourth order tensor and is also the gradient or “Del”.

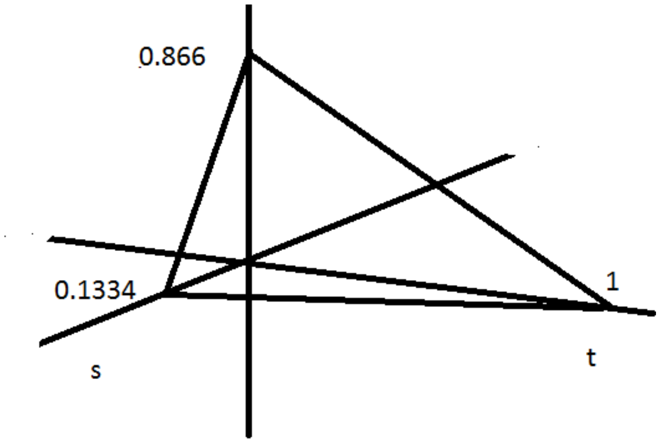
Plane ax+by+cz=0

Sin theta = c=2.9979293

Sin t=3

T=171 fdegrees

Sin theta=0.1411 1/ sin theta = M=0.858=Energy=sin 1



E=|s||t|sin theta

Theta=60 degrees for Mohr-Coulomb theory.

E=(1.334)(1)sin 60 degrees

=115.5

F=sin theta=3 rads

Theta=171 degrees

Sin 171 degrees=0.1411   0.858

Sigma=E strain

If Surface Area=1

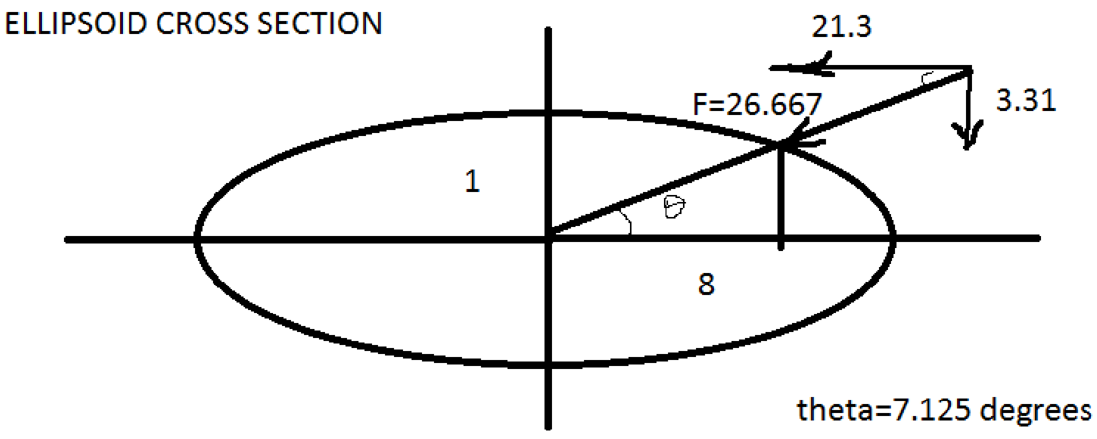
F=sigma

F=E strain

0.858=115.5 *strain

Strain = 1

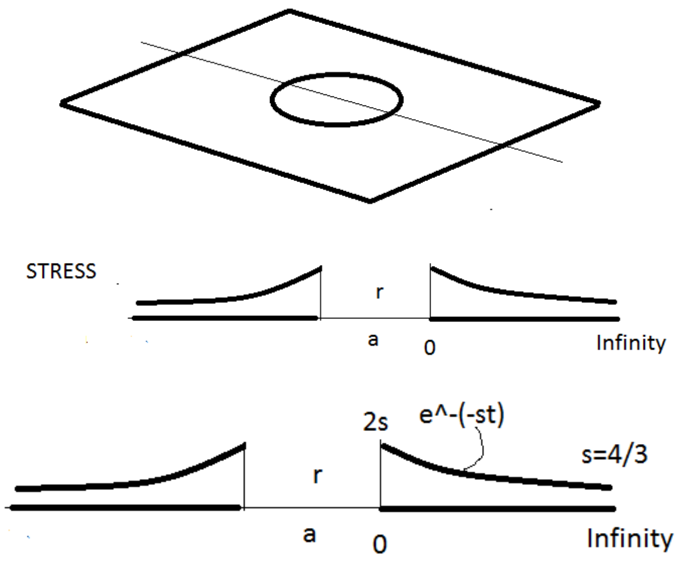
Now the Polar Moment of Inertia for the cross section of the ellipsoid:



J=Pi/2*(c2)^4-Pi/2*(c1)^4)

J=Pi/2(13.622)^4-Pi/2*(2668)

The universe is 13.622 Billion LY across. The Hole in the middle is a=0.2668 Billion LY across.



J=4672

Now the Shear component, is is given by the equation

Tau max=Tc/J

Tau max=(0.4233)(3)/4672 [MECHANICS OF MATERIALS, BEER ET AL]

=2.718

=base e

Referring to the original equation,, we now have the density, the mass, the gradient, the shear, and f=0. All that remains is the acceleration, velocity, and position.

Delta=PL/AE [ibid]

Delta'=(dP/dt)(dL/dt)/(dA/dt)(dE/dt)

dP/dt=d(sin theta)=-cos theta)

dL/dt=velocity

dA/dt= circumference=2Pi (R

dE/dt=1 (Newtonian Fluid)

delta'=cos theta / (2Pi (1)* delta'

cos theta=2Pi

theta=1 rad

Substituting these parameters in to the original equation:

s[(1)-(1/s)*c*(1/s)=Tau max

s^3-sc-e=(4/3)-32.718=1.615

=Ln (1/t)=1.615

where

Y=0.2018=e^t cos 1 (dampened cosine curve)

T0-t=1-0.9849=0.015=1/6.66=3/2 (Mass Gap)

E^(3/2)=4.4824=Mass

Ln (1/t)=t

Ln y'=y

The solution to the Navier Stoke's problem is the dampened cosine curve at t=1.

In conclusion, the dampened cosine curve is smooth.

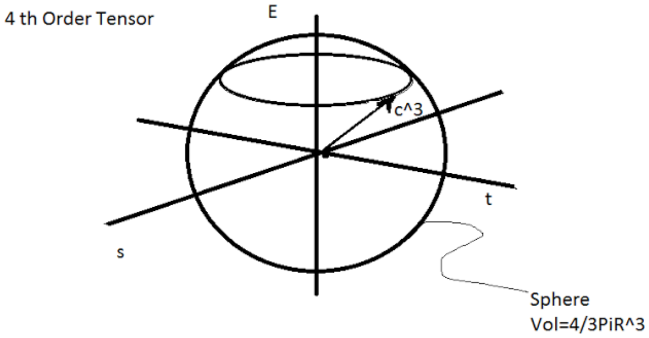
The Density=rho/ M/Volume is smooth because the Volume of an ellipsoid is smooth. The Mass is smooth because the M=1/c^4. C^4 is smooth.

The Velocity du/dt is a parabola so its derivative is smooth. The position u is a scaler. Its derivative is constant.

Del is the gradient which is c^4. It s derivative is the volume of a sphere equation. It is smooth.

The Shear Tau max is smooth since it is Torque * c/ J. Torque is the force= sin theta. Its derivative is smooth. C is a constant. Its derivative is a constant. Anfd the Polar Moment of Inertia Pi/2(c2-c1)^4. Its derivative is smooth.

So thev Navier Stokes Equation is smooth.



Volume of Sphere=4/3 Pi (2.9978929)^3 =112.8

c=2.997929
Sigma/E=strain
Sigma/F/Surface Area

S.A.=1
E=1/0.4233=1/cuz
strain=F/E=2.667/1/0.4233=112.8

This means that the forth order tensor, the speed of light, is as smooth as a sphere. That is why the Navier-stokes Equation is smooth.

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