Journal of Physical Mathematics
ISSN: 2090-0902
Cusack, J Phys Math 2016, 7:2
DOI: 10.4172/2090-0902.1000176
Short Communication

Navier-Stokes Clay Institute Millennium Problem Solution

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Abstract

This paper 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.

Keywords: Quantum physics; Elementary Particle Theory; Navier-Stokes

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 [1].

Explanation

The Navier Stokes equation:

ρ [du/dt+u*Δ u]=Δ*δ +F

where ρ=density

Du/dt=velocity

U=position

Del=gradient

Δδ=Shear

F=all other forces

The solution to this equation is the root of the Golden Mean Equation where the variable is t time explained in Figure 1.

G.M=1.618

First, let's break down the components as follows.

Density=ρ

ρ=M/Volume

For an ellipsoid with axis 1 × 8 × 22 (or 3 × 24 × 66) has a volume of 19905 and a Surface area of 1 shown in Figure 2.

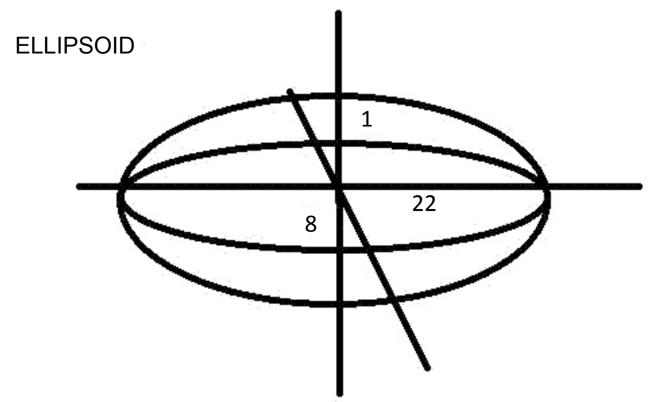

Figure 1: Ellipsoid with axis 1 × 8 × 22.

Mass M=1/c^4

Strain=sigma/E

E=1/0.4233=1/(π)

$Lim_{x\to 0}(\text{Strain}) = d\,\Delta / dt$

D=E*sigma'=1/0.4233*(P'/A")

where P is constant

A'=circumference=2π R

Let R=1/2

A=(πR^2)'=2π (R=π)

Delta=1/(0.4233) *P/π

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

Delta=2.022

Y=e^-t* cos t=dM/dt

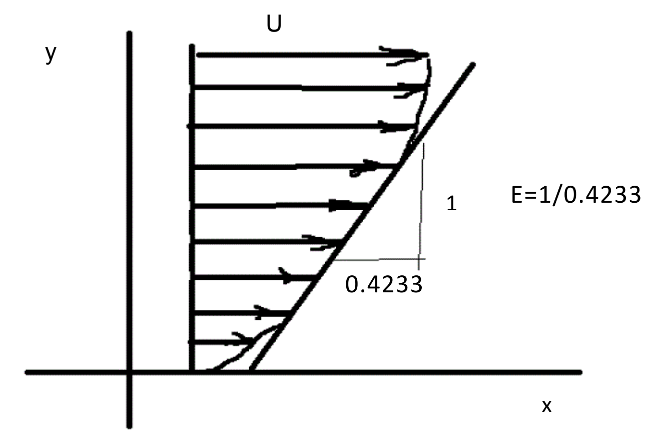

Figure 2: Illustration of proportionality of strain to sigma.

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Received February 08, 2016; **Accepted** April 29, 2016; **Published** May 05, 2016

Citation: Cusack P (2016) Navier-Stokes Clay Institute Millennium Problem Solution. J Phys Math 7: 176. doi:10.4172/2090-0902.1000176

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

Solving for t:

Sin t=2 rads

T=114.59°

Substituting:

E^(-2) (sin 2)=1/81=1/c^4

Where "c" is a fourth order tensor and is also the gradient or "Del".

Plane ax+by+cz=0

Sin θ=c=2.9979293

Sin t=3

T=171°F

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

E=|s||t|sin θ

θ=60 degrees for Mohr-Coulomb theory illustrated in Figure 3.

E=(1.334) (1) sin 60°=115.5

F=sin θ=3 rads

θ=171°

Sin 171°=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 is shown in Figure 4:

J=π/2*(c2)^4-π/2*(c1)^4)

J=π/2(13.622)^4-π/2*(2668)

The universe is 13.622 Billion LY across [2]. 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 shown in Figure 5.

Delta=PL/AE [ibid]

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

dP/dt=d(sin θ)=-cos θ)

dL/dt=velocity

dA/dt=circumference=2πR

dE/dt=1 (Newtonian Fluid)

delta'=cos theta/(2π (1)* delta'

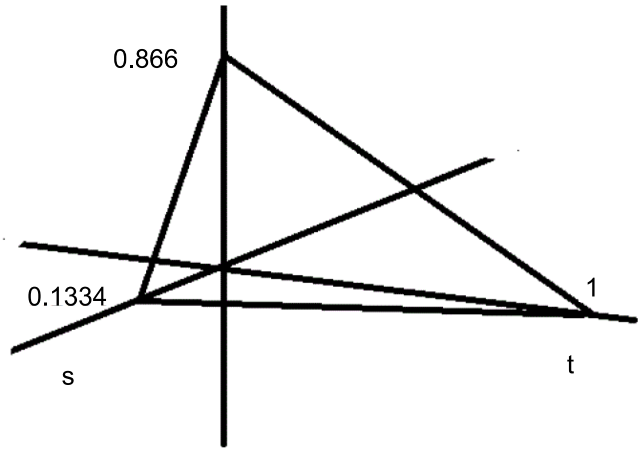

Figure 3: Illustration of Mohr-Coulomb theory.

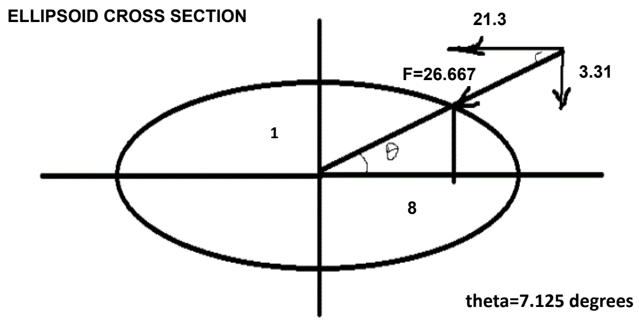

Figure 4: Universal Ellipsoid.

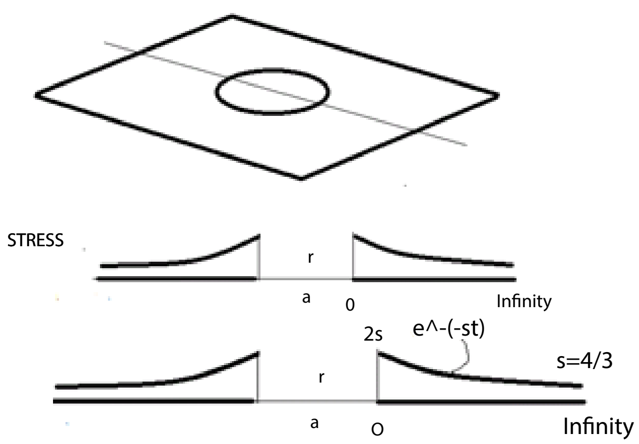

Figure 5: Polar Moment of Inertia for the cross section of the ellipsoid.

cos θ=2Pi

θ=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=1.615~1.618=G.M.

=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

So the Navier Stokes is solved by the Golden Mean Parabola [3]

t=1/(t-1)

t^2-t-1=0,

Quadratic roots t=1.618

Conclusion

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

where t^2-t-1=0

This parabola 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. Its 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. And the Polar Moment of Inertia π/2(c2-c1)^4. Its derivative is smooth.

So the Navier Stokes Equation is smooth.

Volume of Sphere=4/3 π (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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