International Journal of Scientific and Innovative Mathematical Research(IJSIMR)
Volume 7, Issue 12, 2019, PP 24-30
ISSN No. (Online) 2454-9444
DOI: http://dx.doi.org/10.20431/2347-3142.0712005
www.arcjournals.org

Hodge's Conjecture Clay Institute Millenium Problem Solution

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Abstract: *Here is a paper that provides a proof for the Hodges Conjecture that all solutions to the complex Manifold are linear. A simple way to understand this is the Ln function.*

1. Introduction

Statement of the Hodge Conjecture

Let

$$\mathrm{Hdg}^k(X) = H^{2k}(X, \mathbf{Q}) \cap H^{k,k}(X).$$

We call this the group of *Hodge classes* of degree 2*k* on *X*.

The modern statement of the Hodge conjecture is:

Hodge conjecture. Let *X* be a non-singular complex projective manifold. Then every Hodge class on *X* is a linear combination with rational coefficients of the cohomology classes of complex subvarieties of *X*.

A projective complex manifold is a complex manifold which can be embedded in complex projective space. Because projective space carries a Kähler metric, the Fubini–Study metric, such a manifold is always a Kähler manifold. By Chow's theorem, a projective complex manifold is also a smooth projective algebraic variety, that is, it is the zero set of a collection of homogeneous polynomials.

2. Modelling the Complex Manifold

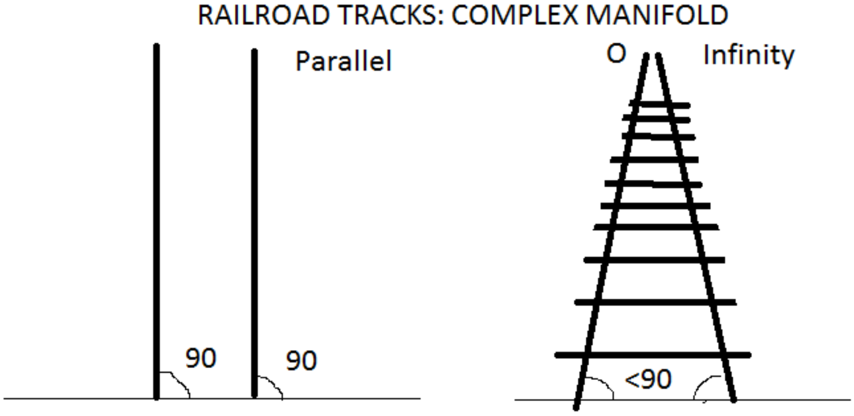

ILLUSTRATION 1 RAILROAD TRACKS

Two parallel lines when viewed from above are 0 degrees difference in slope. When the same lines are viewed in perspective, the angle between them is less than 90 degrees (Pi/2). These appear to go to infinity whereas we know they don't. From the illustration on the right. This phenome can be modelled by a box within a circle. In fact, this circle is just one particular case, but the analogy can be used to model any vector space that is complete.

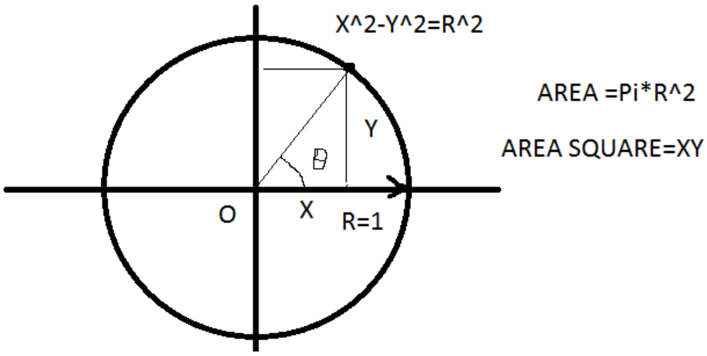

ILLUSTRATION 2 CIRCLE PROPERTIES

We know from simple trigonometry that,

Sin theta=y/R y=R sin theta

Cos theta=x/R x=R cos theta

The equation of a circle is, x^2+y^2=r^2

Inserting,

R^2*cos^2 theta +R^2 sin ^2 theta=R^2

Let R=1 (arbitrary)

Cos ^2theta +=sin ^2theta =1

Cos theta +sin theta=sqrt 1=+/-1

Cos dtheta/dt=sin dtheta/dt=+/-1

W=dtheta/dt n

Cos w+sin w=1

Now Area of a circle=Pi R^2=Pi(1)^2=Pi

Cos w+sin w=R^2

Cos w+ sin w=A/Pi

Consider the Area of the square x by y

A sq=xy

Asq'=(xy)'

={Rsin theta)(Rcos theta)'

=R^2 sin theta cos theta]'

=2R(-cos theta sin theta]

Integral Asq'=A-2R^2/2sin theta (-cos theta)

Set Asq=0

0=R^2 sin heta cos theta

Sin theat =0 or cos theta =0

Theta= {0,90, 180,270,360}

Cos w+sin w=A/t

Integral w=Integral dTheta/dt

W^2/2=theta

Cos (w^2/2)+sin (w^2/2)=A/Pi=0/Pi=0

W^2/2={0, 90, 180, 270, 360}

W={0, Pi, sqrt Pi, sqrt(2Pi), sqrt 3Pi/2)}

W={0, 1.7725, 2.5066, 2.1708} rads

Substituting each of these in to the above equation:

Xcos w+sin w=0

Cos 0+sin 0 (not=)0

Cos (sqrt Pi)+sin (sqrt Pi)(not =0

Cos (sqrt(2Pi)+ sin (sqrt(2Pi)(not =)0

Cos (3Pi/2)+sin (sqrt 3Pi/2)=(not =)0

All these conditions fail.

Now, the Area of the square =xy

Asq=xy

Asq=[Rsin theta][Rcos theta]

=Area/R=PiR

Let R=1

Pi=sin theta *cos theta

Derivative:

C1=(cos theta)(-in theta)

C1=-Pi

Derivative:

C2=(-sin theta)(-cos theta)

C2=sin theta cos theta

-c1=c2=-Pi

C1=Pi

C2=-Pi

-c1=sin theta cos theta

C2=sin theta cos theta

-C1==C2

-Pi=-Pi

True!

Asq=xy

0=Rsin theta cos theta

Sin theta=0
Theta=0, Pi, 2Pi
Cos theta=0
Theta=Pi/2, 3Pi/2
Theta={0, Pi/2, Pi, 3Pi/2, 2Pi}
Theta={)Pi/2, 1Pi /2, 2Pi/2, 3Pi/2, 4Pi/2}
Theta=nPi/2

n=0,1,2,3,4 → Asq=0 (Linear Set}

3. Two Parallel Vectors such Rail Road Tracks have a difference between their Direction of Zero.

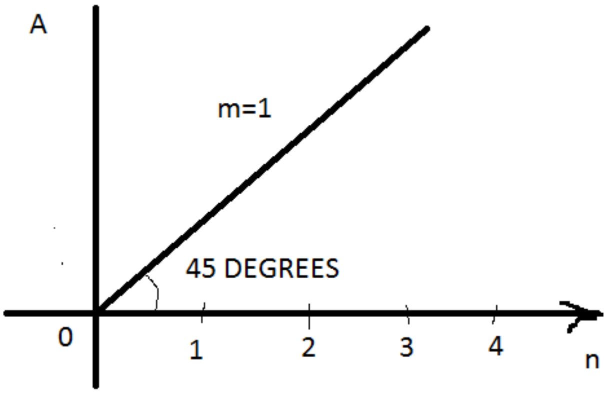

ILLUSTRATION 3 LINEAR SET n AND THE DERIVATIVE

Asq'=0=C1

Asq=xy

Asq=Rsin theta cos theta

Asq'=C1=[R^2sin theta cos theta}'

-2R(cos theta sin theta

0=C1=-2R cos theta sin theta

Derivative:

0=cos theta sin theta

Cos theta =0

Sin theta-=0

Theta= {nPi/2) n==?0, 1,2,3,4 (Linear zSet)

Linear Set=[Linear Set}'

nPi/2=L.S.

nPi/2=0

n=0

n={Null Set}

Arsq=xy

=Rsin theta cos Rcos theta

Sin 0 cos 0=

=(01)(1)

=0

Asq=0

So if the derivative and Integral of the Linear Set are equal:

Y=y'

Integral y=y'

Y^2/2=y

Y^2/2-y=0

Y(y-2)=0

Y=0 , y=2

Y=y'=y''

Asq=e^x

Y=2=e^x

Y=Ln 2=x

X=0.6931

Y=x

Y=mx+b

Y=(1)x=0

Y=x (Linear)

Y=e^x

Y'=e^x=0

X=-Infinity

TWO PARELL VECTOR CAN HAVE APPEAR TO JOIN AT INFINITY.

Now,

Ln (0)=1/.0

E^(Ln 0)=0=e^196

0=1.3235x 10^85

1/x=196 (Infinity)

X=1/196=0.005102

x/Pi=0.05102=1624~1618=Golden Mean

x=1.618Pi

0.618x=x/1.618=Pi

Sqrt(-1)x=Pi

Sqrt(-1)(0)=Pi

0=Pi/4

Golden Mean

X^2-x-1=0

X=1.618, 0.618

X^2-x-1=0

(Ln 0)^2-Ln o-1=0

Uinfinity^2-Infinity-1=0

Derivative =slope=m=LINEAR RELATIONSHIP BETWEEN x and y

2*Infinity-1-1=0

2*Inifinity=2 Infinity=1

Ln (0)=Ln (Pi/sqrt(-1)=1.626 $\rightarrow$ 1.618

Ln (0)=-Infinity=1

So the difference in the parallel railroad tracks is 0, When the angle is <90 they appear Infinite. And the solution to is linear.

4. GOLDEN MEAN EQUATION: WHERE THE MULTIPLE MEETS THE FRACTION I.E., AT THE NUMBER 1

X^2-x-1=n^2/2

THE RATE OF CHANGE OF THE APPROACH TO 1 IOF THE GOLDEN MEAN FUNCTION IS THE DERIVATIVE. SET THE DERIVATIVE =n OR THE LINEAR SET.

Derivative

2x-1=n

2x-1=0

X=1/2

2x-1=1

X=1

2x-1=2

X=3/2

2x-1=3

X=4/2=2

Area of a circle =PiR^2

R=1

Area=Pi

Pi*0=0

Pi*1/2=Pi/2

Pi* 1=Pi

Pi*3/2=3Pi/2

Pi* 2

=2Pi

Derivative of Golden Mean={0, Pi/2, Pi, 3Pi/2, 2Pi}

=Theta for n→ 0, 1,2,3,4

5. LN FUNCTION

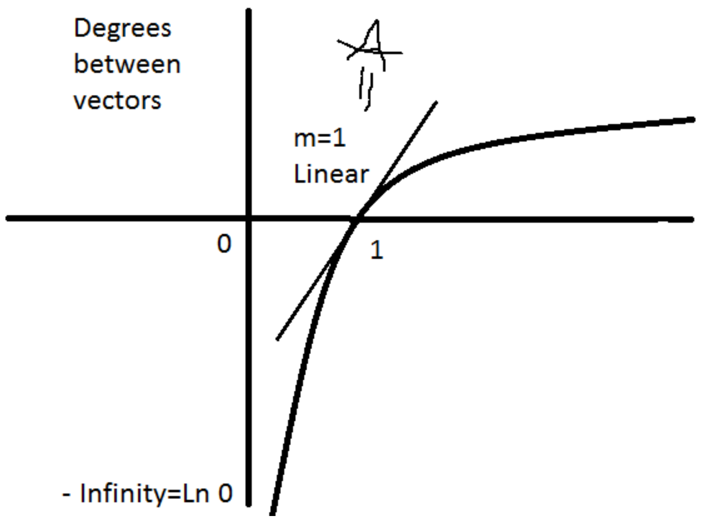

ILLUSTRATION 4 LN FUNCTION

The universal function is when y=y'=y''. So, since we are sitting at 1, the solution is linear when the angle between the two vectors is zero. We move toward 0, the angle between the two vectors goes to infinity.

6. Conclusion

So, this proves that the solution is linear and infinite at the same time. The diagonal of every box has a sin and a cosine component. So, this proves that every box has the same solution: Linear and Infinite and zero at the same time.

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Citation: PAUL T E CUSACK, *(2019). Hodge's Conjecture Clay Institute Millenium Problem Solution. International Journal of Scientific and Innovative Mathematical Research (IJSIMR), 7(12), pp. 24-30. http://dx.doi.org/ 10.20431/2347 -3142.0712005*