

AXIOMS

NON-PROBABILISTIC INTERPRETATION OF WAVE FUNCTION: 6:1

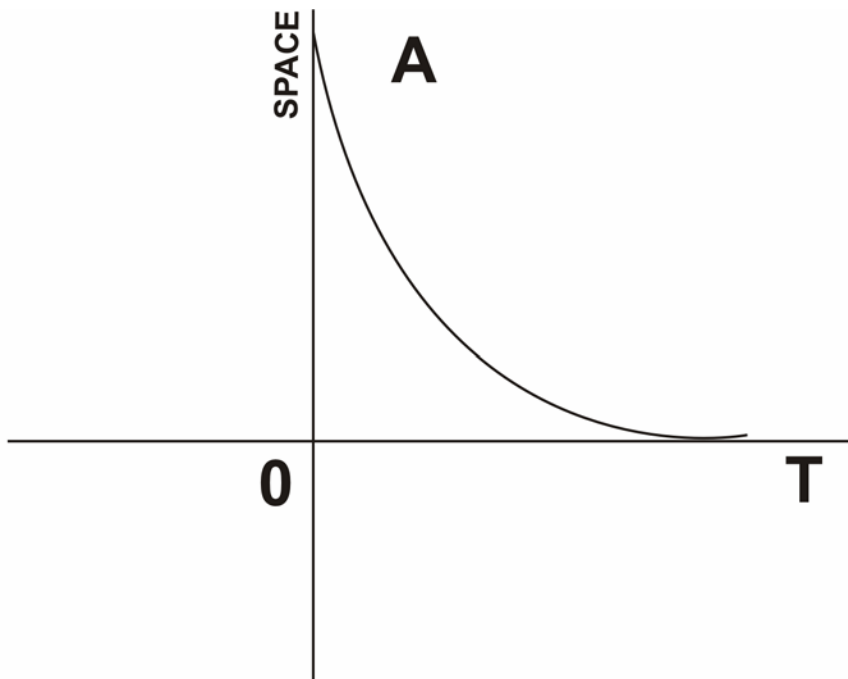
LET Y_N BE A SET OF EIGENVECTORS CORRESPONDING TO EIGEN VALUES E_N OF SCHRODINGER'S EQUATION.

$$P_N(x) = \int |Y_N|^2 dx$$

THE TERM WAS INTERPRETED AS PROBABILITY FUNCTION.

IN THIS NEW APPROACH TO QUANTUM THEORY, THE ALTERNATIVE INTERPRETATION IS THAT $P_N(x)$ REPRESENTS A MEASURE OF SPATIAL DENSITY OF THE PARTICLE(S) AND THEREFORE OF MATTER:
THE FOLLOWING RESULTS FOLLOW FROM THE DEFINITION OF $P_N(x)$:
SEE THE GRAPH BELOW.

SPACE TIME GRAPHS



LINE A REPRESENTS SPACE TIME

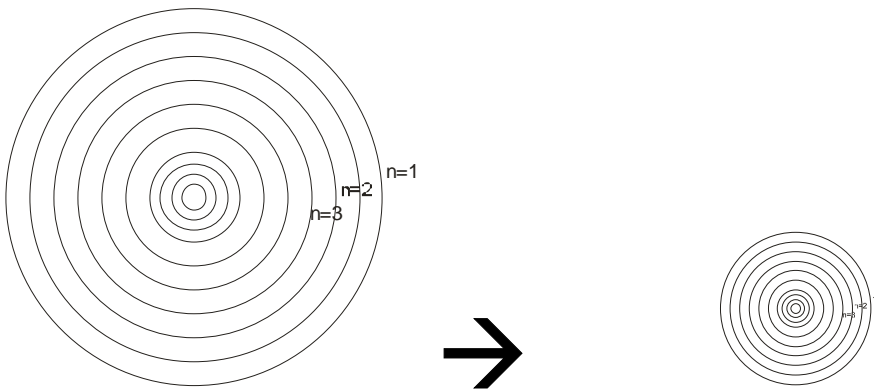
THE NEW QUANTUM THEORY IS BASED SOME AXIOMS RELATING TO THE DENSITY FUNCTION $P_N(x)$ WHICH IS THE INTEGRAL OF THE SQUARE OF THE EIGENFUNCTION OF SCHRODINGER'S EQUATION.

THE AXIOMS ARE ALSO GROUPED INTO TWO; ONE GROUP FOR PHENOMENON OF CONTRACTION, AND THE OTHER GROUP FOR PHENOMENON OF EXPANSION.

EXAMPLE OF CONTRACTION IS THE FORMATION OF BLACK HOLE OR SINGULARITY. EXAMPLE OF EXPANSION IS THE BIG BANG.

CONTRACTION

1 1:2 CONTRACTION



$$f < \infty$$

$$g < \infty$$

$$e < \infty$$

$$t > 0$$

$$F \rightarrow \infty$$

$$G \rightarrow \infty$$

$$E \rightarrow \infty \quad T \rightarrow 0$$

WHERE F IS FREQUENCY, G IS GRAVITY, E IS ENERGY, D IS DENSITY, AND T IS TIME

THE FOLLOWING LAWS GOVERN CONTRACTION IN THE UNIVERSE.
AXIOMS:

- (1) **SPATIAL DENSITY D_N , VARIES INVERSELY AS $P_N(x)$..**
(1C)
- (2) **ENERGY DENSITY E_N , VARIES INVERSELY AS $P_N(x)$.**
(2C)
- (3) **GRAVITY G_N , VARIES INVERSELY AS $P_N(x)$..**
(3C)
- (4) **$P_N(x)$ IS UNIFORM AND CONVERGENT WITH RESPECT TO N .**
(4C)
- (5) **$Y_N(x)$ IS UNIFORM AND CONVERGENT WITH RESPECT TO N .**
(4CY)

- (6) **FOR ANY TWO GIVEN INTEGERS K, J WHERE $K < J$ THE SCHRODINGER
WAVE FUNCTION GIVES $P_K(x) > P_J(x)$, AND $E_K < E_J$ THAT IS E_K IS
DIVERGENT WHILE $P_K(x)$ IS CONVERGENT.**
(5C)

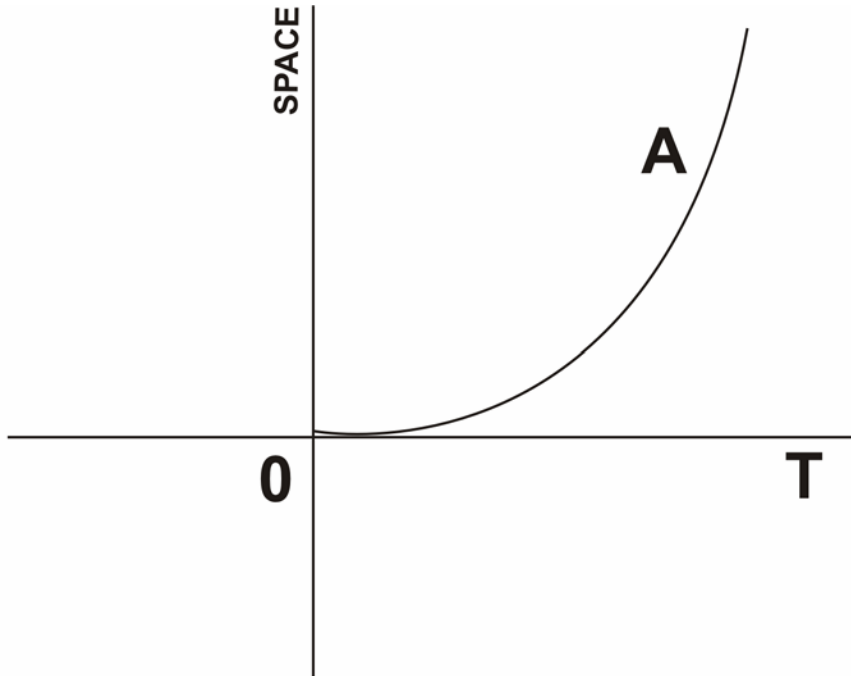
- (7) **FOR ANY TWO GIVEN INTEGERS K, J WHERE $K < J$ THE SCHRODINGER
WAVE FUNCTION GIVES $Y_K(x) > Y_J(x)$, AND $E_K < E_J$ THAT IS E_K IS
DIVERGENT WHILE $Y_K(x)$ IS CONVERGENT.**
(5CY)

NOTE AXIOM 3 HAS NOT BEEN PROVED YET, EXCEPT TO SAY THAT SINCE FROM NEWTON'S LAW, ONE CAN DEDUCE THAT GRAVITY VARIES WITH ENERGY SO THEREFORE THIS AXIOM 3 IS TRUE AS A COROLLARY TO AXIOM 2.

THE REMAINING AXIOMS HAVE BEEN PROVED MATHEMATICALLY AND WILL BE PUBLISHED IN THE FUTURE.

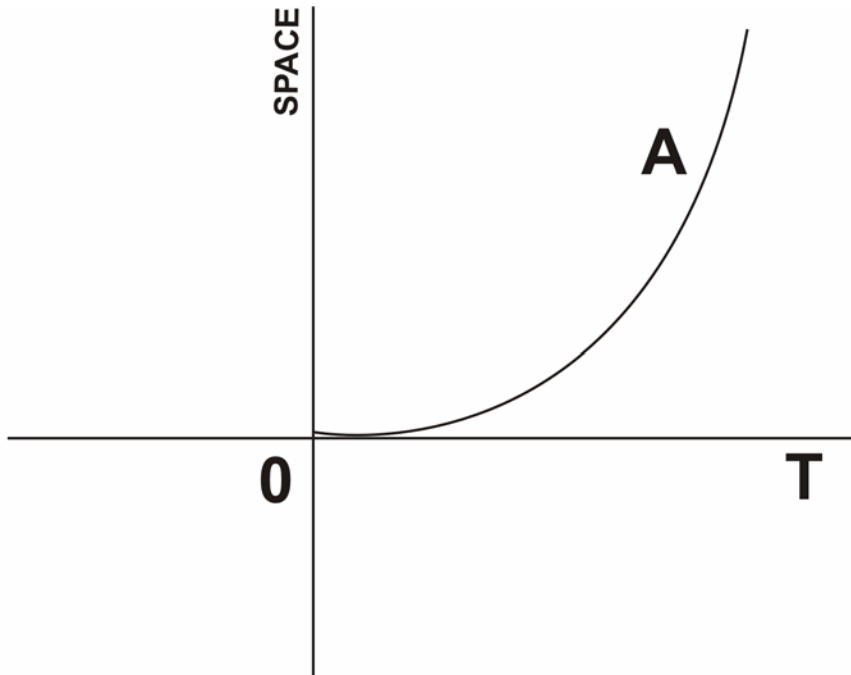
WE SHALL ENDEAVOR TO APPLY THE ABOVE AXIOMS TO THE BIG BANG THEORY TO SEE HOW CLASSICAL PHYSICS MEETS THE NEW QUANTUM MECHANICS.

SPACE TIME GRAPHS.



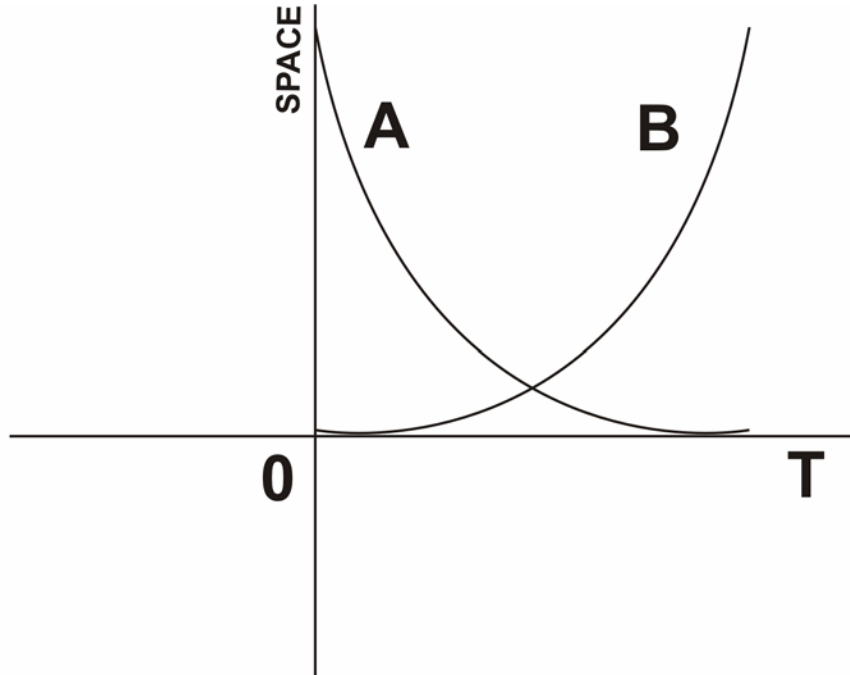
LINE A REPRESENTS VARIATION OF GRAVITY

SPACE TIME GRAPHS.



LINE A REPRESENTS VARIATION OF FREQUENCY

SPACE TIME GRAPHS.



LINE A REPRESENTS PACETIME

LINE B REPRESENTS VARIATION OF DENSITY, GRAVITY, FREQUENCY, OR ENERGY.

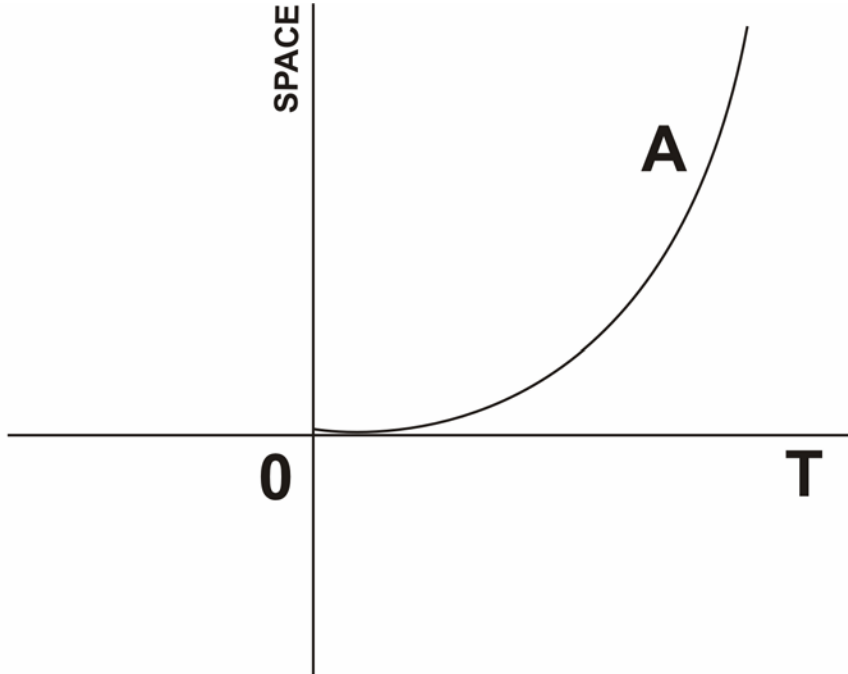
ENERGY DENSITY AND DENSITY OF MATTER

AS THE UNIVERSE OR ANYBODY CONTRACTS THE VOLUME OF 3 DIMENSIONAL SPACE AT EACH TIME STEP WOULD DECREASE DURING THE 'COLLAPSE' BUT SINCE THE NUMBER OF FUNDAMENTAL PARTICLES AND RADIATION QUANTA REMAIN THE SAME, AS THEY WERE ALL PRODUCED AT THE SAME TIME DURING THE BIG BANG, THE **DENSITY OF MATTER** AND **ENERGY** IN 3 DIMENSIONAL SPACE BOTH INCREASE.

HOW DOES OUR NEW QUANTUM THEORY EXPLAIN THIS INFINITE ENERGY DENSITY AND INFINITE DENSITY OF MATTER INCREASE?

ENERGY DENSITY

SPACE TIME GRAPHS.



LINE A REPRESENTS VARIATION OF ENERGY.

FROM AXIOM 2C ABOVE THE ENERGY E_N , IS DEFINED AS,

$$E_N = L/P_N(x).$$

WHERE L IS A CONSTANT.

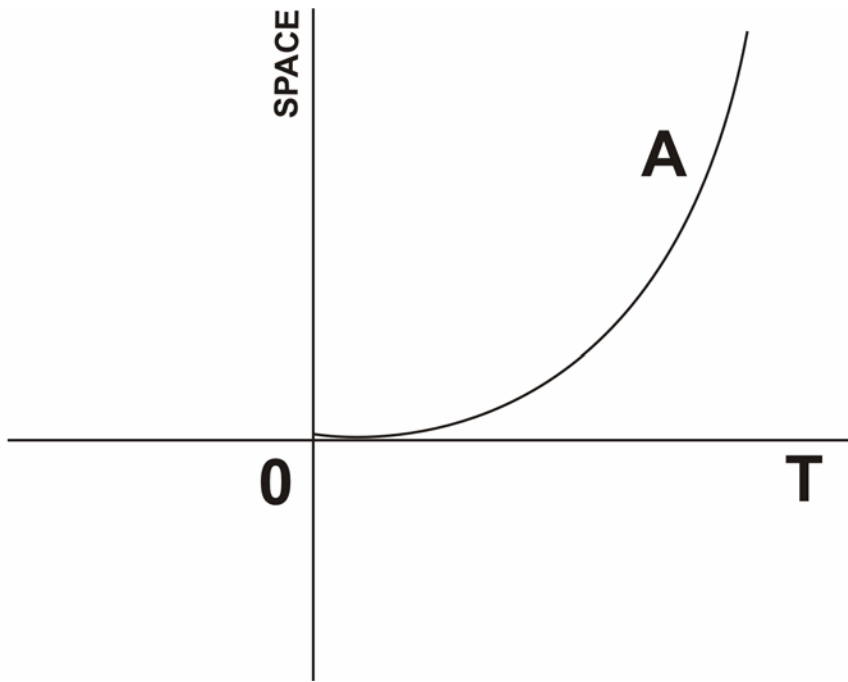
FROM AXIOM 4C AS N GOES TO INFINITY $P_N(x)$ GOES TO ZERO WHICH MAKES THE ENERGY E_N , GO TO INFINITY.

HENCE IN A SINGULARITY THE ENERGY DENSITY IS INFINITY, THEREFORE CLASSICAL MECHANICS AND QUANTUM MECHANICS ARE COMING TOGETHER.

DENSITY OF MATTER

SPACE TIME GRAPHS.

LINE A REPRESENTS VARIATION OF DENSITY WITH TIME DURING CONTRACTION.



IT IS ALSO REMARKED AGAIN THAT AS A BODY IS CRUSHED INTO A SMALLER AND SMALLER VOLUME, THE SPATIAL DENSITY INCREASES. THIS ACTION OF DENSITY INCREASING AS A MASS IS CRUSHED IS EXPLAINED IN THE NEW QUANTUM THEORY BELOW.

FROM AXIOM 1C ABOVE THE SPATIAL DENSITY D_N IS DEFINED AS,

$$D_N = D/P_N(x)$$

WHERE D IS A CONSTANT.

FROM AXIOM 4C AS N GOES TO INFINITY $P_N(x)$ GOES TO ZERO WHICH MAKES THE SPATIAL DENSITY D_N GO TO INFINITY.

HENCE IN A BIG BANG SINGULARITY SPATIAL DENSITY IS INFINITY, AND ONCE MORE CLASSICAL MECHANICS AND QUANTUM MECHANICS ARE SHOWN TO MOVE SIDE BY SIDE.

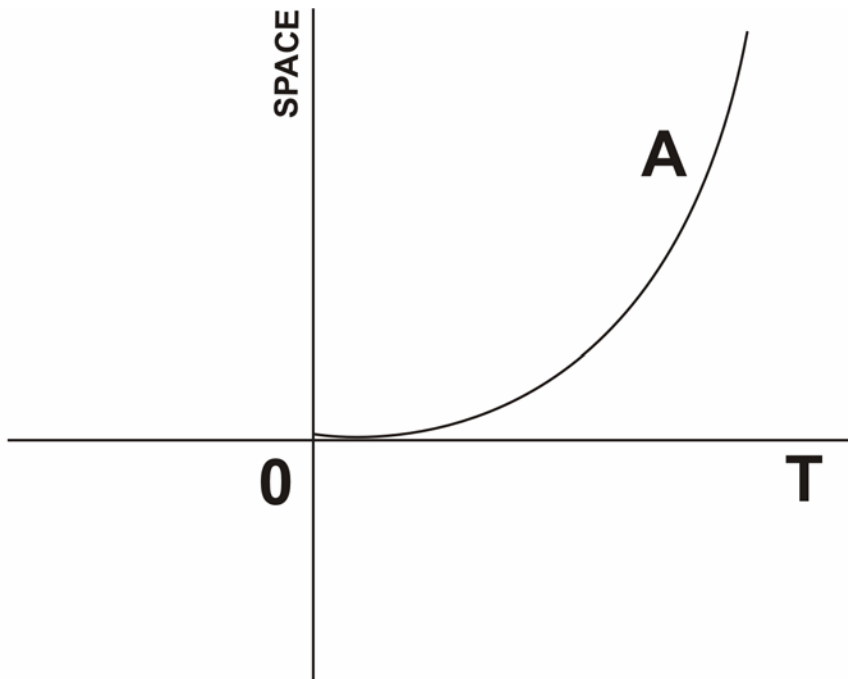
EXPANSION OF THE UNIVERSE

LET Y_N BE A SET OF EIGENVECTORS CORRESPONDING TO EIGEN VALUES E_N OF SCHRODINGER'S EQUATION.

$$P_N(x) = \int |Y_N|^2 dx$$

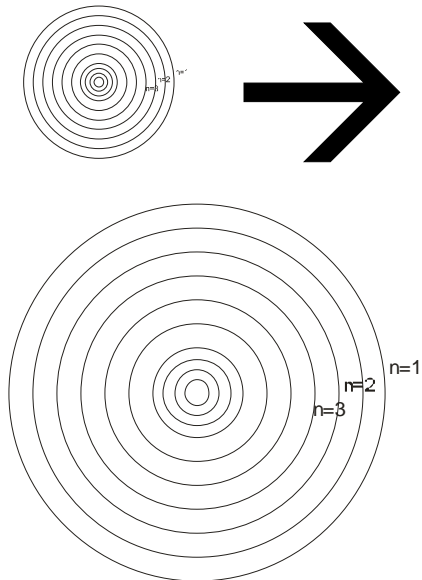
$P_N(x)$ IS DIVERGENT. SEE THE GRAPH BELOW.

SPACE TIME GRAPHS.



LINE A REPRESENTS SPACE TIME.

DIAGRAM OF EXPANSION OF UNIVERSE



$$F \rightarrow \infty$$

$$G \rightarrow \infty$$

$$E \rightarrow \infty$$

$$D \rightarrow \infty$$

$$T \rightarrow \square$$

$$f < \infty$$

$$g < \infty$$

$$e < \infty$$

$$d \rightarrow 0$$

$$t \rightarrow \infty$$

**WHERE F IS FREQUENCY, G IS GRAVITY, E IS ENERGY,
D IS DENSITY, AND T IS TIME**

THE FOLLOWING LAWS GOVERN EXPANSION IN THE UNIVERSE.

AXIOMS:

- (1) **SPATIAL DENSITY D_N , VARIES INVERSELY AS $P_N(X)$..**
(1E)
- (2) **ENERGY DENSITY E_N , VARIES INVERSELY AS $P_N(X)$.**
(2E)
- (3) **GRAVITY G_N , VARIES INVERSELY AS $P_N(X)$..**
(3E)
- (4) **$P_N(X)$ IS UNIFORM AND DIVERGENT WITH RESPECT TO N.**
(4E)
- (5) **$Y_N(X)$ IS UNIFORM AND DIVERGENT WITH RESPECT TO N.**
(4EY)

(7) FOR ANY TWO GIVEN INTEGERS K, J WHERE $K > J$ THE SCHRODINGER WAVE FUNCTION GIVES $P_K(x) > P_J(x)$, AND $E_K < E_J$ THAT IS E_K IS CONVERGENT WHILE $P_K(x)$ IS DIVERGENT.

(5E)

(8) FOR ANY TWO GIVEN INTEGERS K, J WHERE $K > J$ THE SCHRODINGER

WAVE FUNCTION GIVES $Y_K(x) > Y_J(x)$, AND $E_K < E_J$ THAT IS E_K IS CONVERGENT WHILE $Y_K(x)$ IS DIVERGENT.

(5EY)

LATER WE SHALL ENDEAVOR TO APPLY THE ABOVE AXIOMS TO THE BIG BANG THEORY TO SEE HOW THE NEW QUANTUM MECHANICS MEETS CLASSICAL PHYSICS.

ENERGY DENSITY AND DENSITY OF MATTER

AS THE UNIVERSE OR ANYBODY EXPANDS THE VOLUME OF 3 DIMENSIONAL SPACE AT EACH TIME STEP WOULD INCREASE DURING THE 'EXPANSION' BUT SINCE THE NUMBER OF FUNDAMENTAL PARTICLES AND RADIATION QUANTA REMAIN THE SAME, AS THEY WERE ALL PRODUCED AT THE SAME TIME DURING THE BIG BANG, THE **DENSITY OF MATTER** AND **ENERGY** IN 3 DIMENSIONAL SPACE BOTH DECREASE.

HOW DOES OUR NEW QUANTUM THEORY EXPLAIN THIS INFINITE ENERGY DENSITY AND INFINITE DENSITY OF MATTER INCREASE?

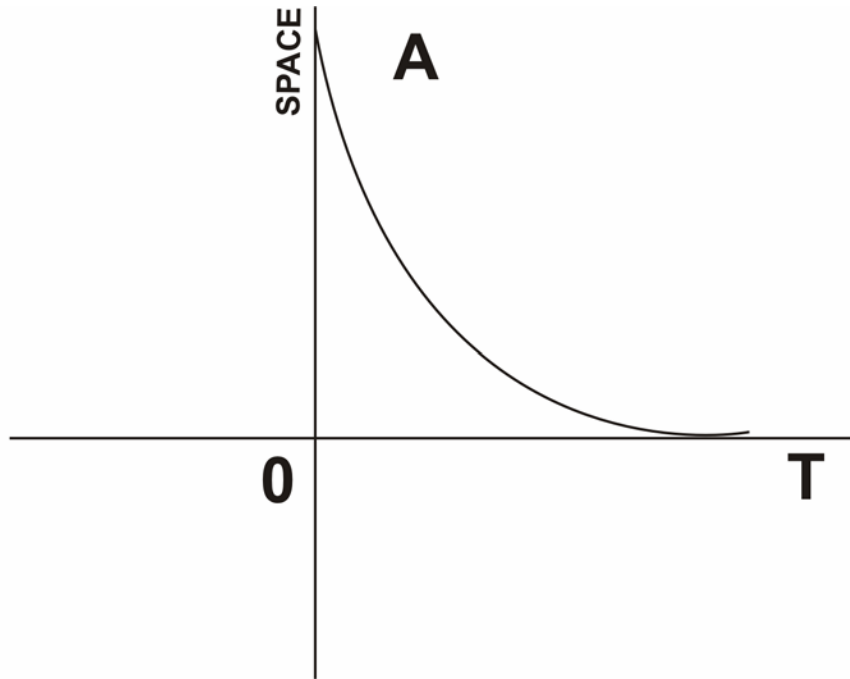
ENERGY DENSITY

FROM AXIOM 2E ABOVE THE ENERGY E_N , IS DEFINED AS:

$$E_N = L/P_N(x).$$

WHERE L IS A CONSTANT.

SPACE TIME GRAPHS



LINE A REPRESENTS VARIATION OF ENERGY WITH TIME.

FROM AXIOM 4E AS n GOES TO INFINITY $P_n(x)$ GOES TO INFINITY WHICH MAKES THE ENERGY E_n , GO TO ZERO.

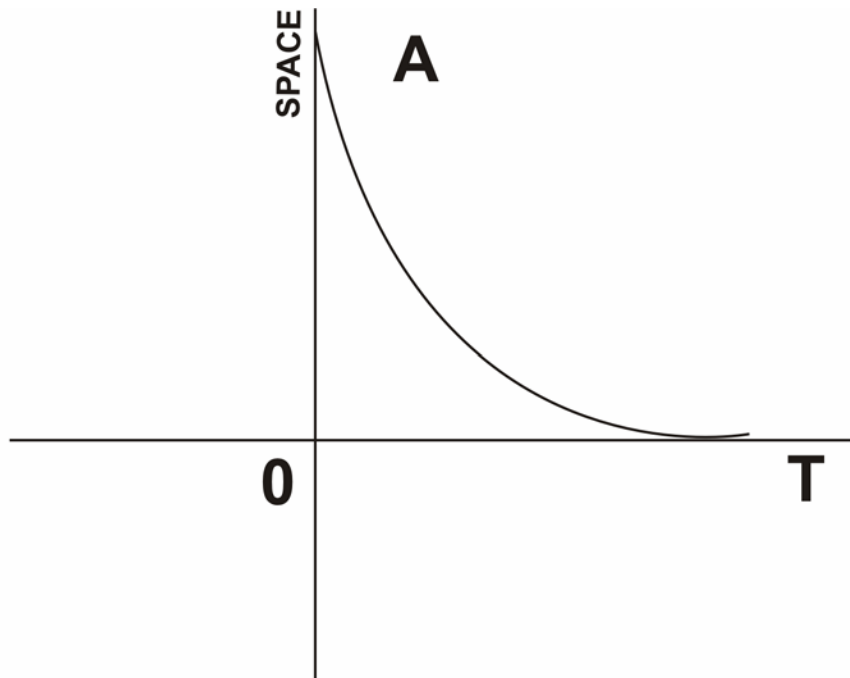
HENCE AFTER THE BIG BANG THE ENERGY DENSITY DECREASES FROM INFINITY TO ZERO, WHICH AGREES WITH TABLE 1 AND WHICH PROVES THAT CLASSICAL MECHANICS AND QUANTUM MECHANICS ARE COMING TOGETHER. THIS ALSO AGREES WITH THE COSMOLOGICAL TABLE 2 BELOW.

DENSITY OF MATTER

IT IS ALSO REMARKED AGAIN THAT AS A BODY IS CRUSHED INTO A SMALLER AND SMALLER VOLUME, THE SPATIAL DENSITY INCREASES. THIS ACTION OF DENSITY INCREASING AS A MASS IS CRUSHED IS EXPLAINED IN THE NEW QUANTUM THEORY BELOW.

FROM AXIOM 1C ABOVE THE SPATIAL DENSITY D_n IS DEFINED AS:

SPACE TIME GRAPHS



LINE A REPRESENTS VARIATION OF DENSITY WITH TIME.

$$D_N = D/P_N(x)$$

WHERE D IS A CONSTANT.

FROM AXIOM 4C AS N GOES TO INFINITY $P_N(x)$ GOES TO ZERO WHICH MAKES THE SPATIAL DENSITY D_N GO TO INFINITY.

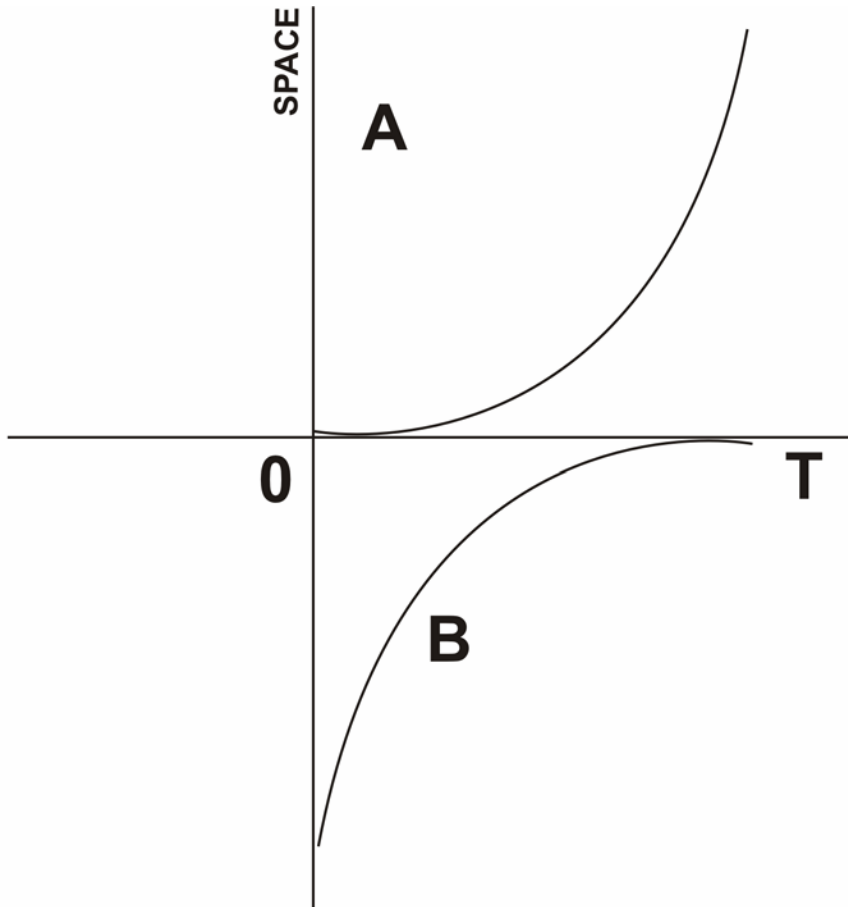
HENCE IN A BIG BANG SINGULARITY SPATIAL DENSITY IS INFINITY, AND ONCE MORE CLASSICAL MECHANICS AND QUANTUM MECHANICS ARE SHOWN TO MOVE SIDE BY SIDE. THIS ALSO AGREES WITH THE COSMOLOGICAL TABLE 2 BELOW.

EINSTEIN'S QUANTUM GRAVITY IN COSMIC EXPANSION

IT HAS BEEN SAID BEFORE THAT, IN CLASSICAL PHYSICS, AS A BODY IS CRUSHED INTO A SMALLER AND SMALLER VOLUME, THE GRAVITATIONAL ATTRACTION INCREASES, AND HENCE THE ESCAPE VELOCITY GETS BIGGER. THIS ACTION OF GRAVITY INCREASING AS A MASS IS CRUSHED IS EXPLAINED IN THE NEW QUANTUM THEORY AS FOLLOWS.

IT IS ONCE MORE ASSUMED HERE THAT GRAVITY INDEED IS CAUSED BY GRAVITONS WHICH CAN BE EXPRESSED IN A WAVE FORM. FOR NOW IT IS ALSO ASSUMED THAT THE WAVE FUNCTION WHICH DESCRIBES THE PARTICLE CAN ALSO DESCRIBE THE GRAVITON. (A MORE APPROPRIATE WAVE DESCRIPTION WILL BE OFFERED IN ANOTHER PAPER).

SPACE TIME GRAPHS.



LINE A REPRESENTS SPACE TIME.

LINE B REPRESENTS VARIATION OF GRAVITY GRAVITY WITH TIME.

FROM AXIOM 3E ABOVE THE GRAVITY G_N , IS DEFINED AS:

$$G_N = G/Y_N(x)$$

WHERE G IS A CONSTANT. AT THE BIG BANG , WHEN THE QUANTUM FLUCTUATION CAUSE THE SINGULARITY TO GIVE ITS ENERGY IN THE FORM OF HEAT OR WHATEVER THE MATTER HAS TO EXPAND TO BALANCE THE EQUATION.

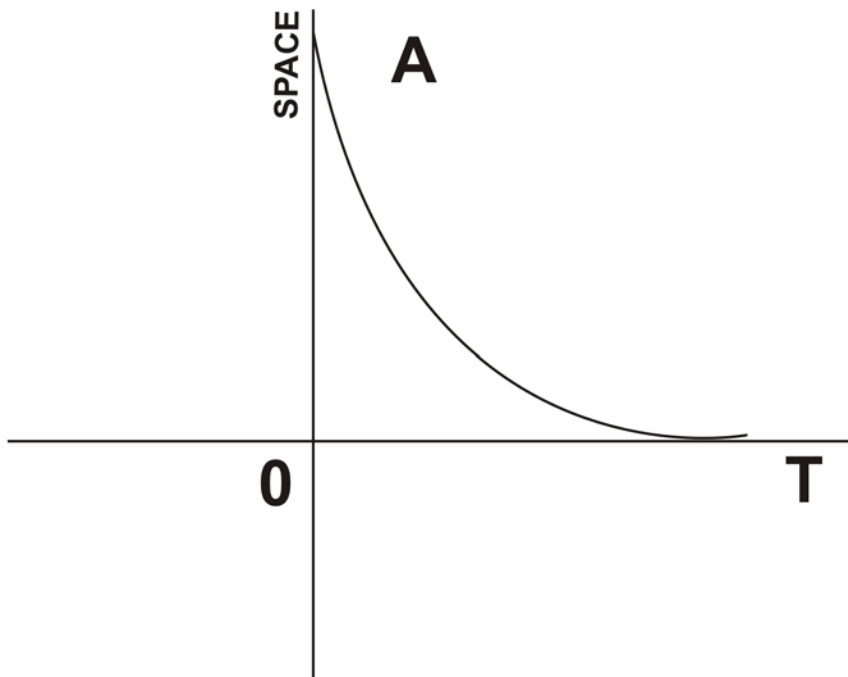
$$E_N = K/Y(N)$$

FROM AXIOM 4EY AS N GOES TO INFINITY $P_N(x)$ GOES TO INFINITY, WHICH MAKES GRAVITY G_N GO TO ZERO.

HENCE IN A BIG BANG GRAVITY DECREASES FROM INFINITY TO ZERO, WHICH ONCE MORE AGREES WITH CLASSICAL PHYSICS. THIS ALSO AGREES WITH OTHER COSMOLOGICAL TABLES.

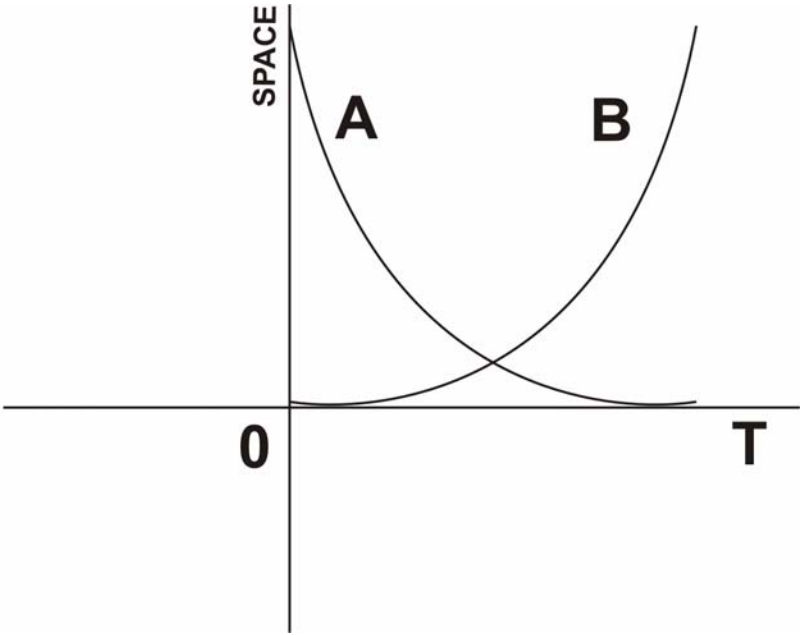
ANOTHER EXAMPLE TAKEN FROM COSMOLOGY IS THAT AT THE CENTRE OF OUR GALAXY IS LUMINOUS COSMIC RAY. THE GRAVITY POTENTIAL FIELD AROUND THE GALACTIC CORE OF THIS MASSIVE BODY DECREASES INVERSELY WITH INCREASING RADIAL DISTANCE. THIS MAKES OUR THEORY VERY STRONG.

SPACE TIME GRAPHS



LINE A REPRESENTS VARIATION OF GRAVITY WITH TIME.

SPACE TIME GRAPHS.



**LINE A REPRESENTS GRAVITY, ENERGY, FREQUENCY, OR DENSITY.
LINE B REPRESENTS SPACE TIME.**