

"ALL THINGS DENOTE THERE IS A GOD" FIRESIDE SERIES

THE GIFT OF AGENCY: A PARABLE OF LIGHT

PERSPECTIVES SHARED BY
JESHUA MORTENSEN
ASTROPHYSICIST

The Gift of Agency: A Parable of Light



All things denote there is a God



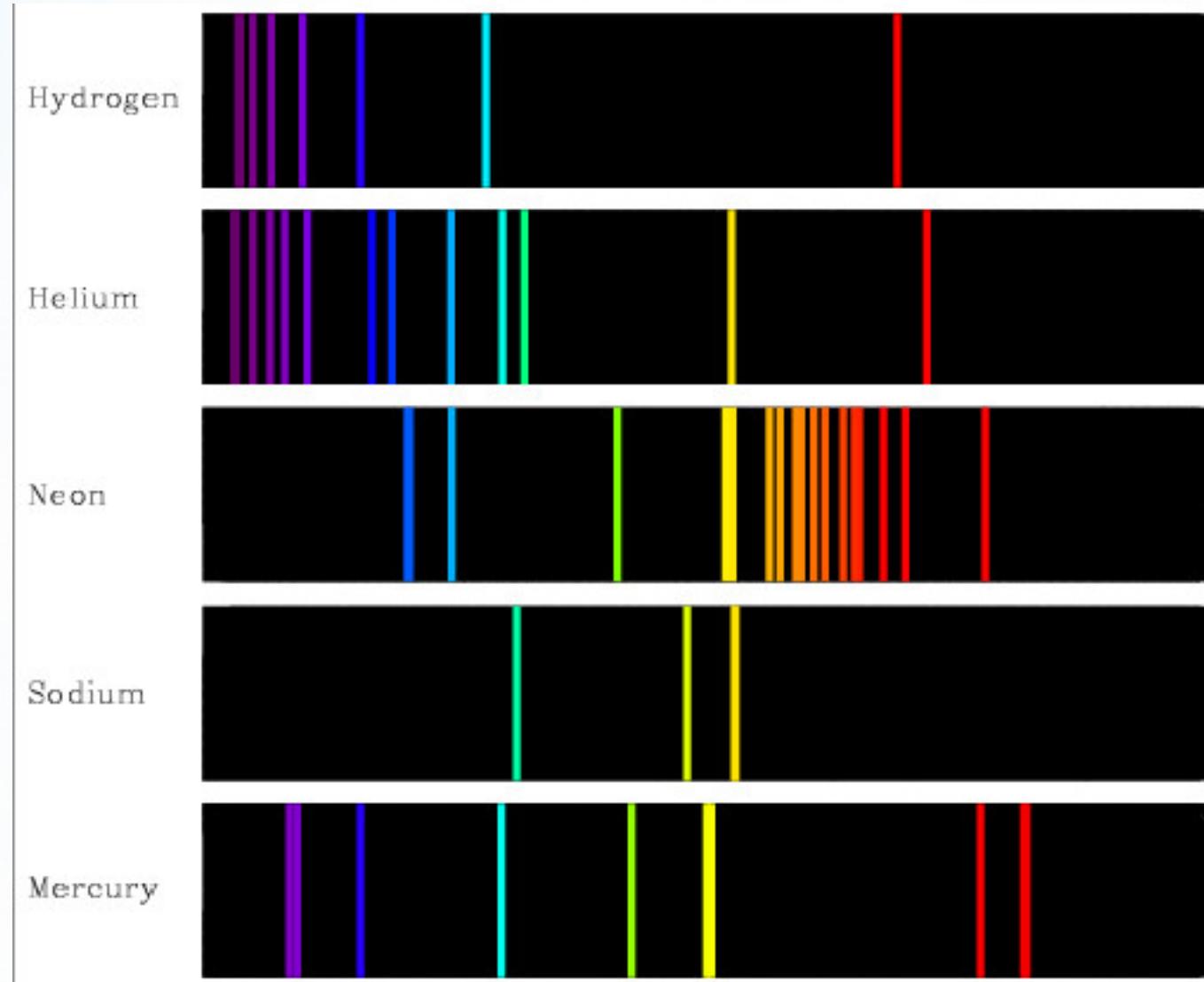
44 But Alma said unto him: Thou hast had signs enough; will ye tempt your God? Will ye say, Show unto me a sign, when ye have the testimony of all these thy brethren, and also all the holy prophets? The scriptures are laid before thee, yea, and **all things denote there is a God**; yea, even the earth, and all things that are upon the face of it, yea, and its motion, yea, and also all the planets which move in their regular form do witness that there is a Supreme Creator.

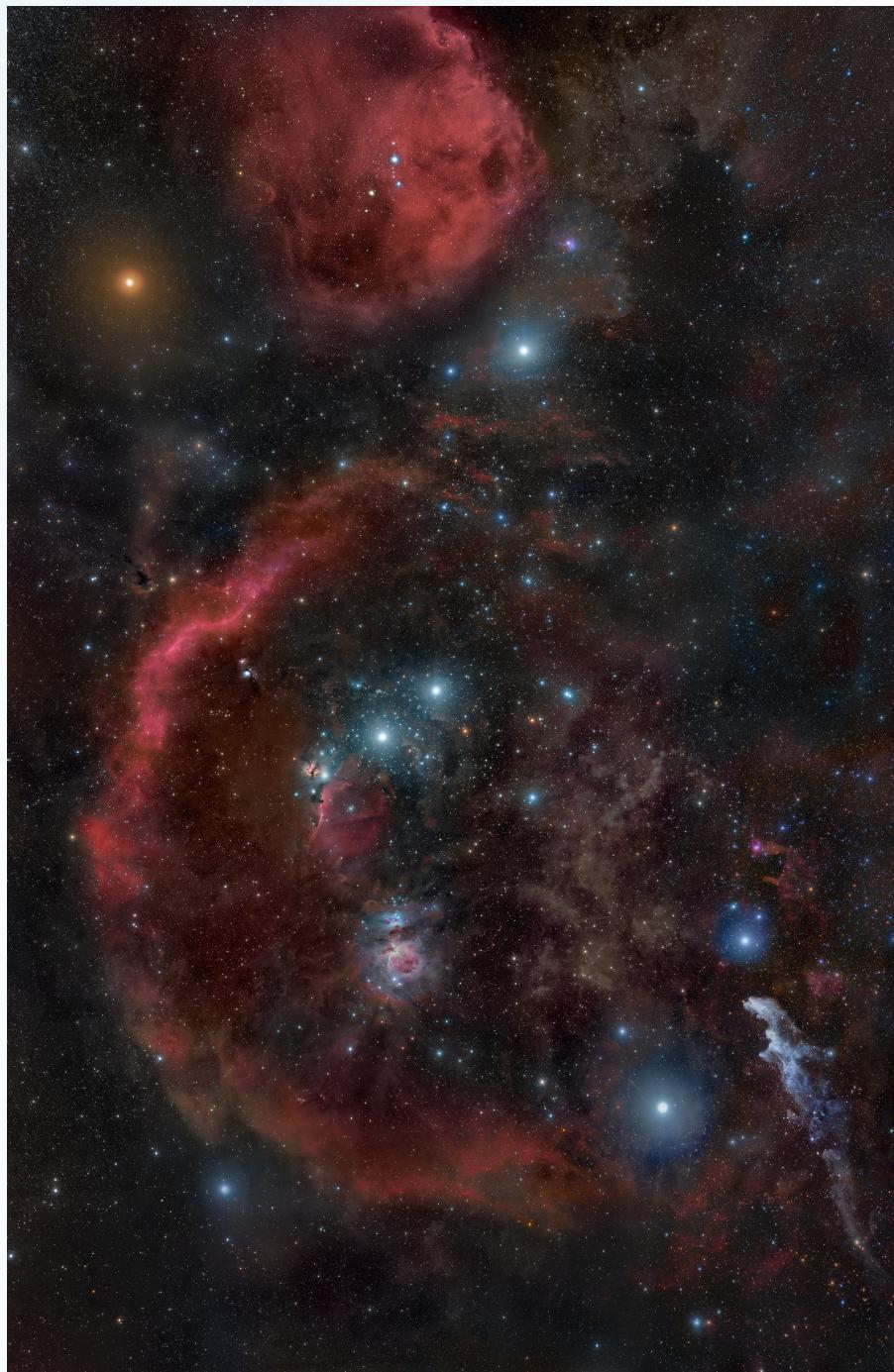
Astrophysicist Study Light



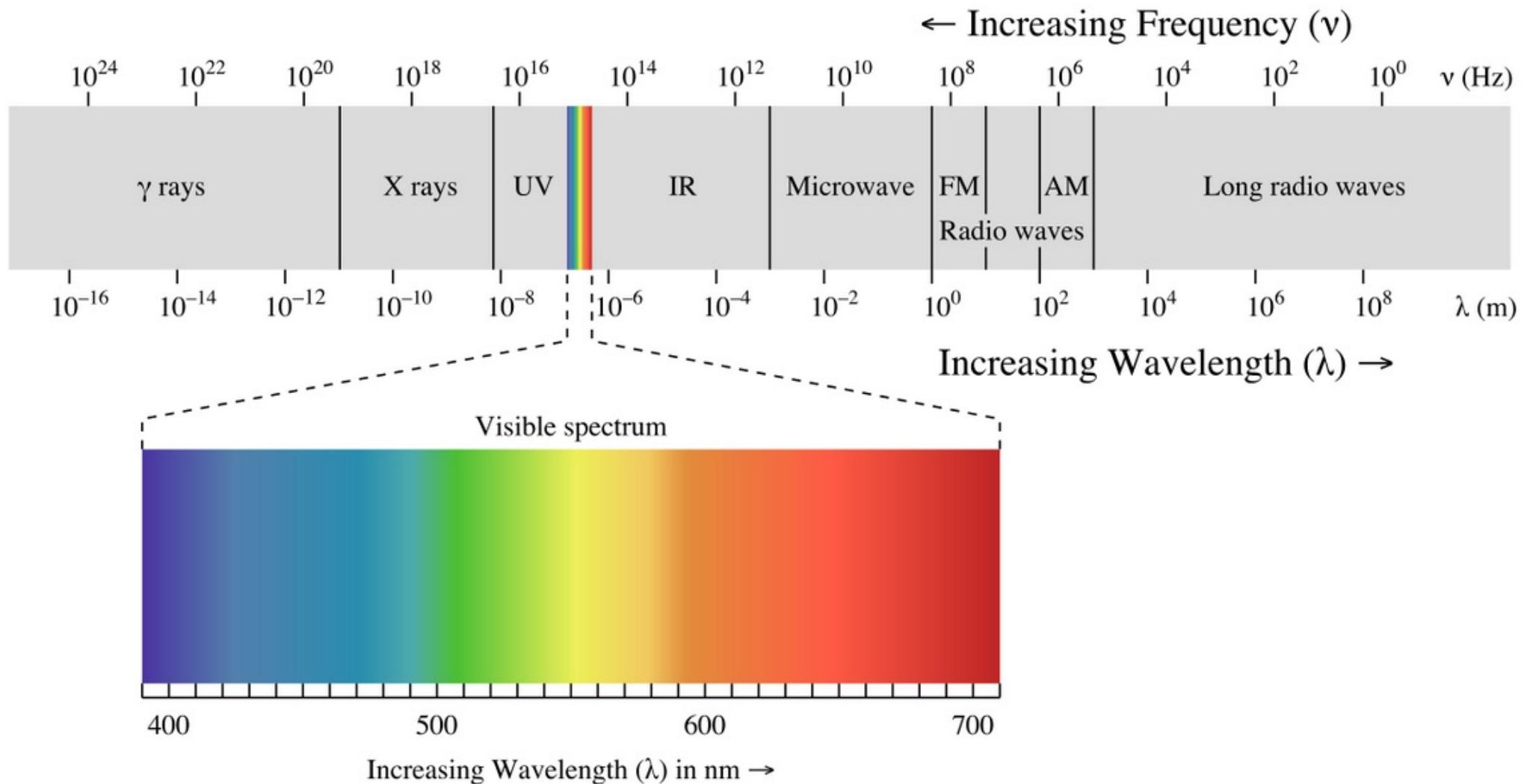
Light Spectrum of Some Elements

Everything we know about the universe comes from what we know about light.



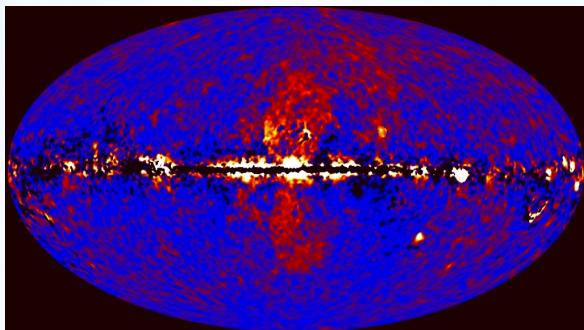


Electromagnetic Spectrum



The Universe in Different Light

Gamma Ray



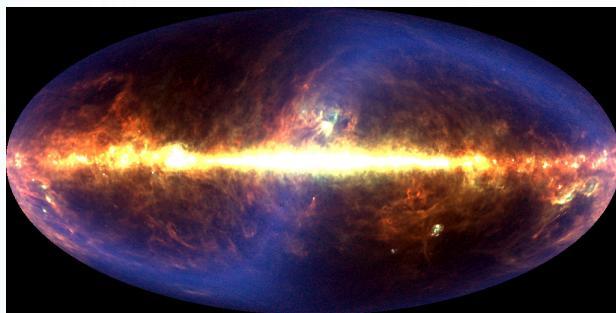
Ultra Violet



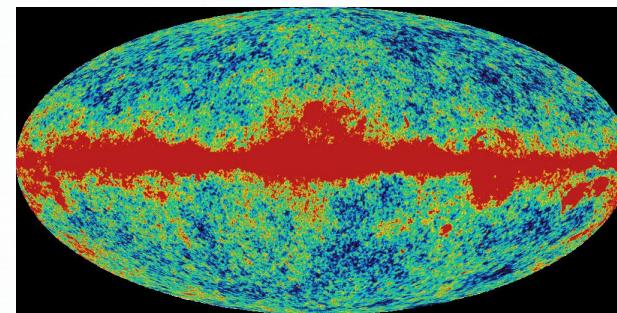
Visible Light



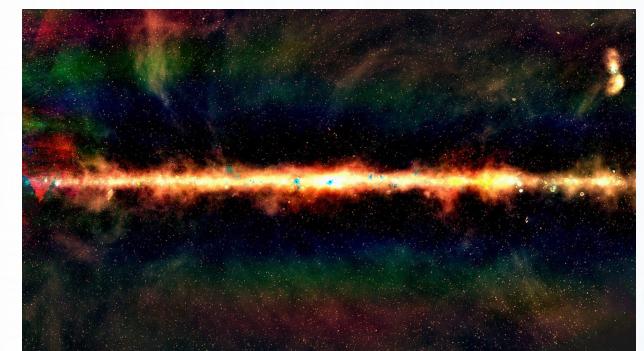
Inferred Light



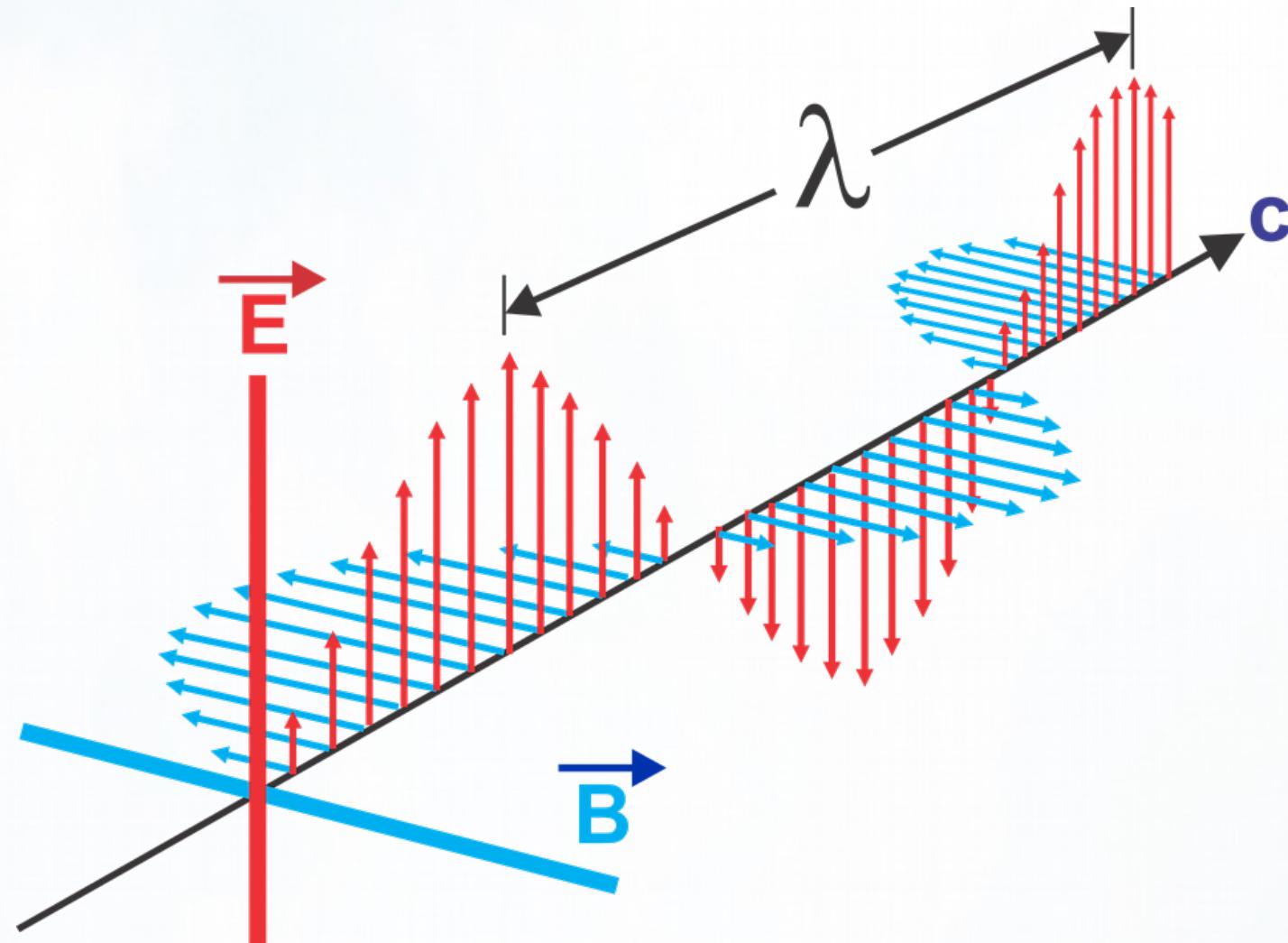
Microwave



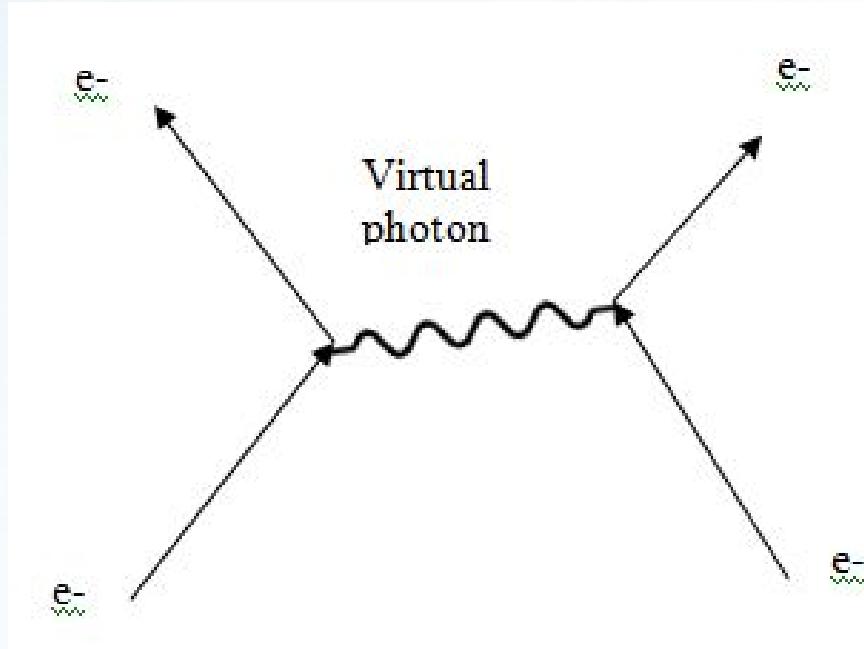
Radio Wave



Light is an Electromagnetic Wave



Force Carrying Particles



$$\Delta E \Delta t \geq \frac{\hbar}{2}$$

	mass →	charge →	spin →	
QUARKS				
u	$\approx 2.3 \text{ MeV}/c^2$	2/3	1/2	up
c	$\approx 1.275 \text{ GeV}/c^2$	2/3	1/2	charm
t	$\approx 173.07 \text{ GeV}/c^2$	2/3	1/2	top
g	0	0	1	gluon
H	$\approx 126 \text{ GeV}/c^2$	0	0	Higgs boson
LEPTONS				
e	$0.511 \text{ MeV}/c^2$	-1	1/2	electron
μ	$105.7 \text{ MeV}/c^2$	-1	1/2	muon
τ	$1.777 \text{ GeV}/c^2$	-1	1/2	tau
ν_e	$<2.2 \text{ eV}/c^2$	0	1/2	electron neutrino
ν_μ	$<0.17 \text{ MeV}/c^2$	0	1/2	muon neutrino
ν_τ	$<15.5 \text{ MeV}/c^2$	0	1/2	tau neutrino
GAUGE BOSONS				
γ	0	0	1	photon
Z	91.2 GeV/c^2	0	1	Z boson
W	80.4 GeV/c^2	± 1	1	W boson

D&C 88:6-12

6 He that ascended up on high, as also he descended below all things, in that he comprehended all things, that he might be in all and through all things, the **light of truth**;

7 Which truth shineth. This is the **light of Christ**. As also he is in the sun, and the light of the sun, and the power thereof by which it was made.

8 As also he is in the moon, and is the light of the moon, and the power thereof by which it was made;

9 As also the light of the stars, and the power thereof by which they were made;

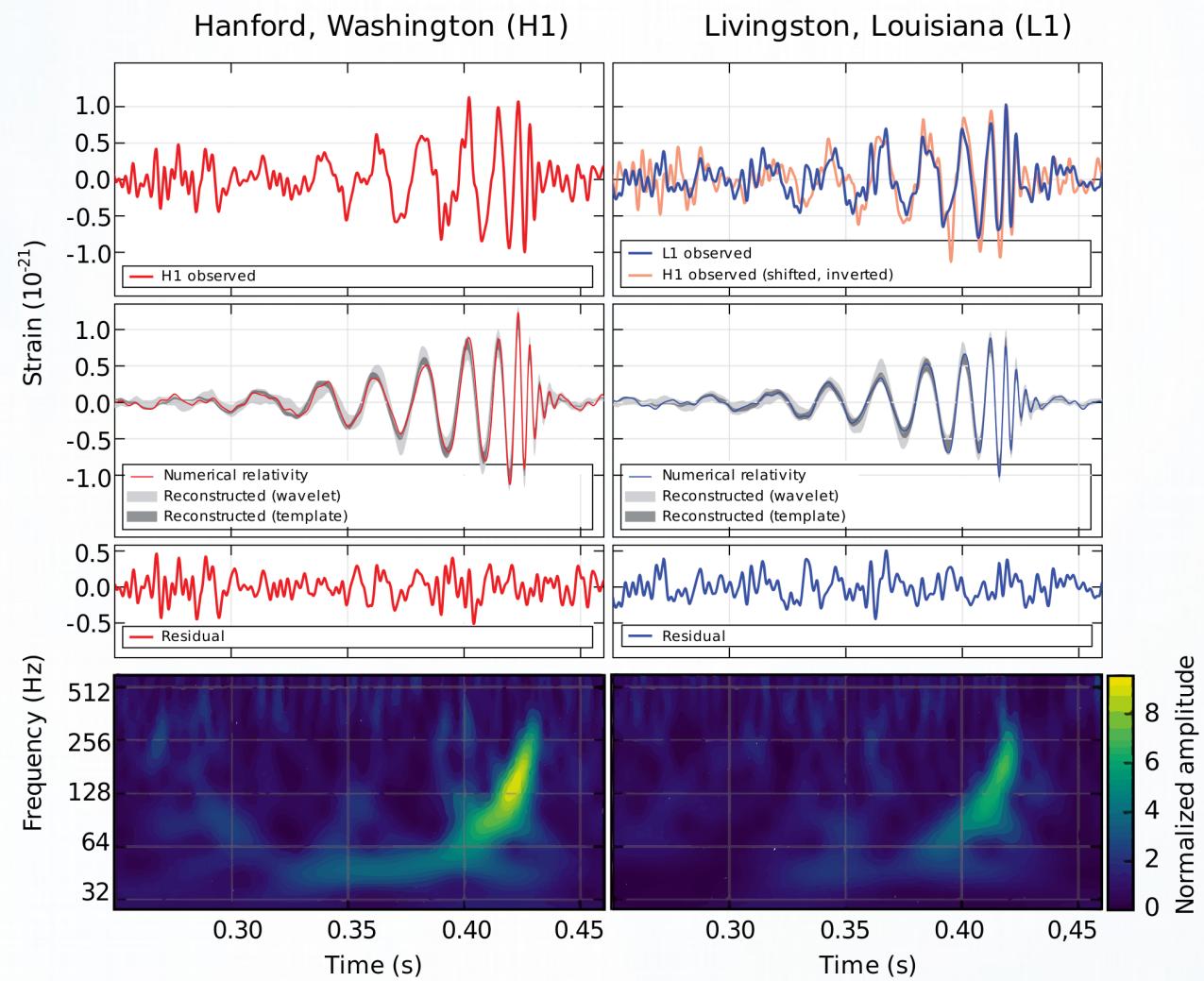
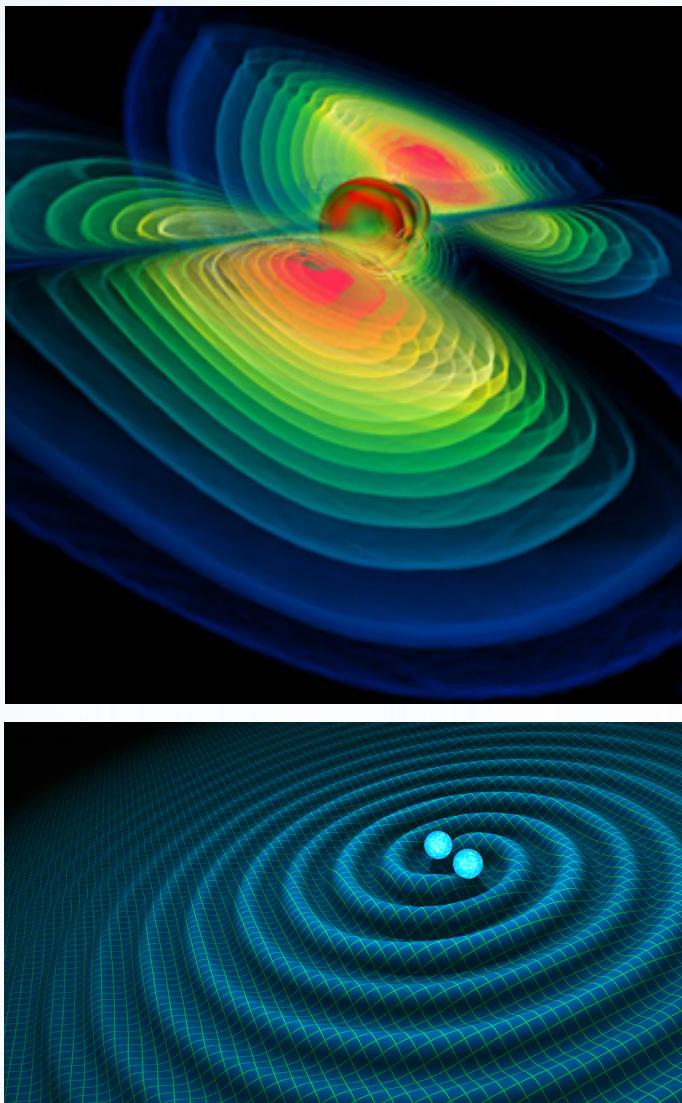
10 And the earth also, and the power thereof, even the earth upon which you stand.

11 And the light which shineth, which giveth you light, is through him who enlighteneth your eyes, which is the **same light that quickeneth your understandings**;

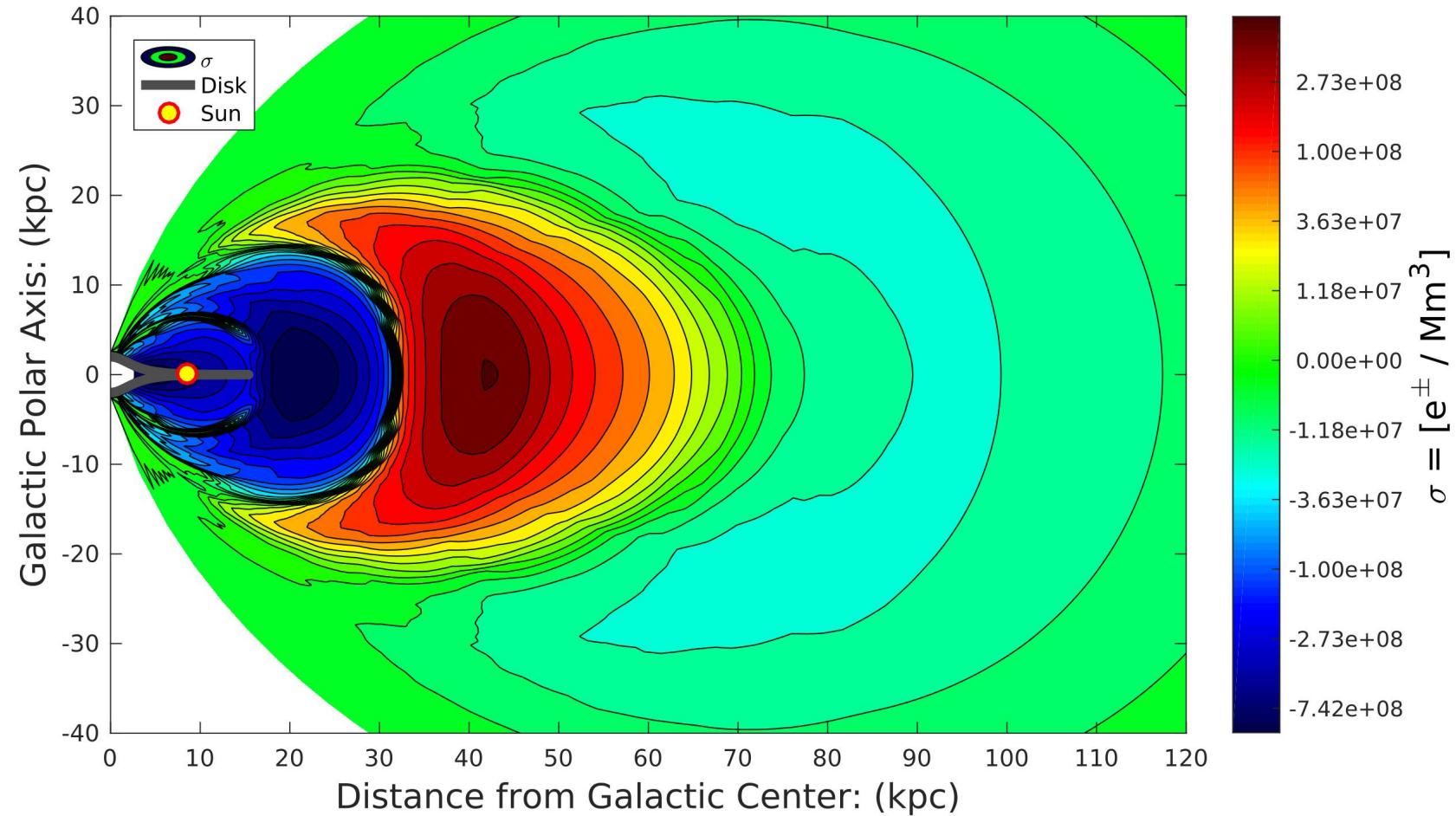
12 Which light proceedeth forth from the presence of God to **fill the immensity of space**.

13 **The light which is in all things**, which giveth life to all things, **which is the law by which all things are governed**, even the power of God who sitteth upon his throne, who is in the bosom of eternity, who is in the midst of all things.

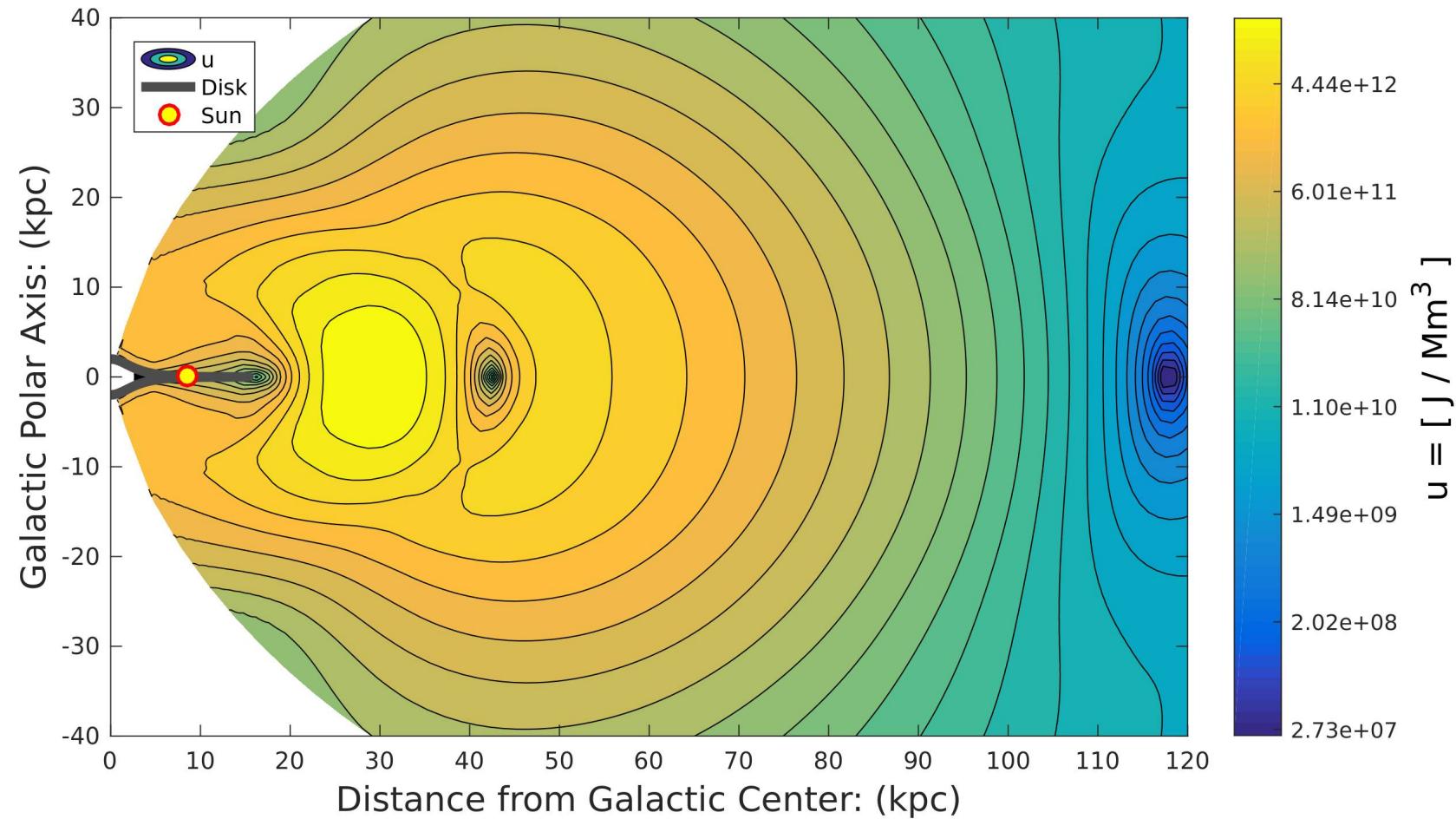
Gravity travels at the speed of light



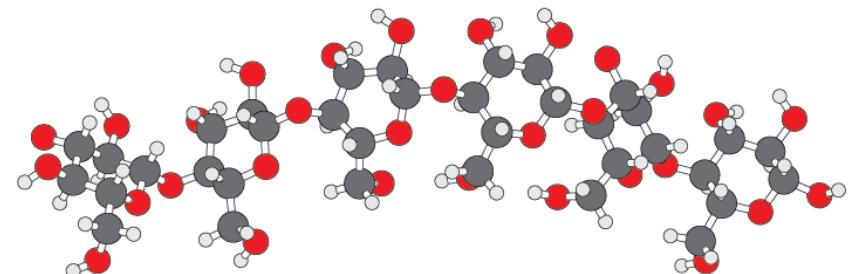
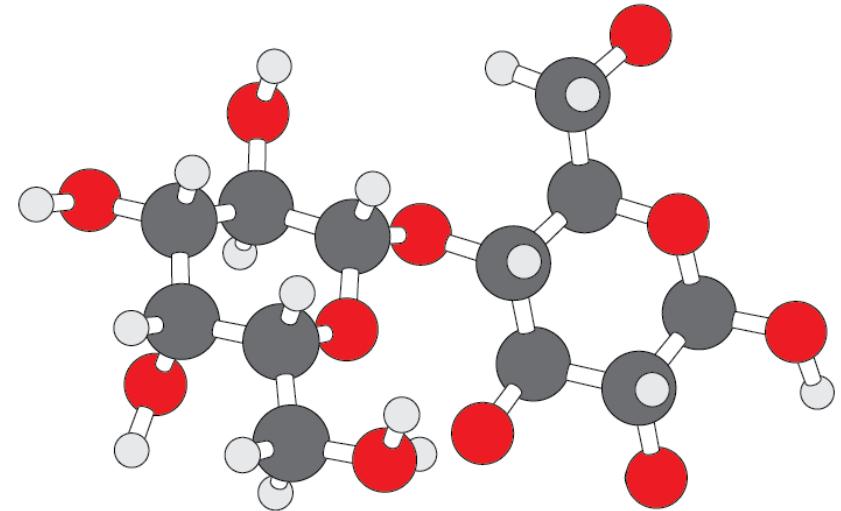
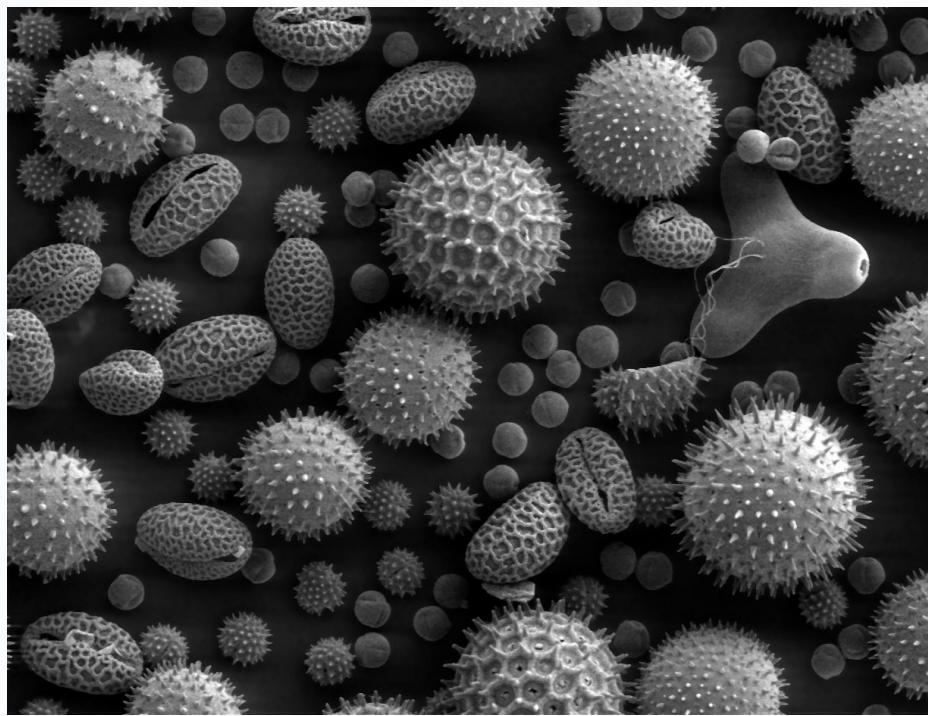
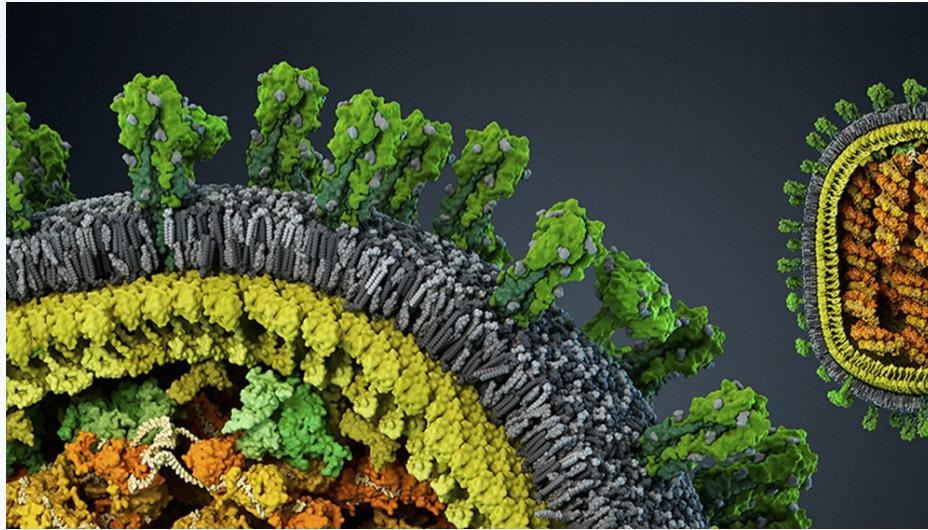
Dark Matter made of light



Electric Fields made of Virtual Photons



Light holds everything together



D&C 93:26-32

26 The Spirit of truth is of God. I am the Spirit of truth, and John bore record of me, saying: **He received a fulness of truth,** yea, even of all truth;

27 And no man receiveth a fulness unless he keepeth his commandments.

28 He that keepeth his commandments receiveth truth and light, until he is glorified in truth and knoweth all things.

29 Man was also in the beginning with God. **Intelligence, or the light of truth,** was not created or made, neither indeed can be.

30 **All truth is independent in that sphere in which God has placed it, to act for itself, as all intelligence also; otherwise there is no existence.**

31 Behold, **here is the agency of man,** and here is the condemnation of man; because that which was from the beginning is plainly manifest unto them, and they **receive not the light.**

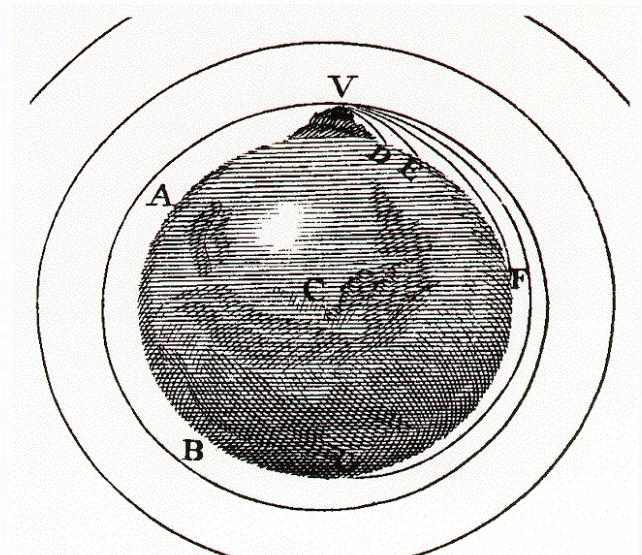
32 And every man whose spirit **receiveth not the light** is under condemnation.

Deterministic Universe



$$\frac{\partial F^{\alpha\beta}}{\partial x^\alpha} = \mu_0 J^\beta$$
$$\frac{\partial G^{\alpha\beta}}{\partial x^\alpha} = 0$$

$$G_{\mu\nu} = \frac{8\pi G}{c^4} T_{\mu\nu}$$



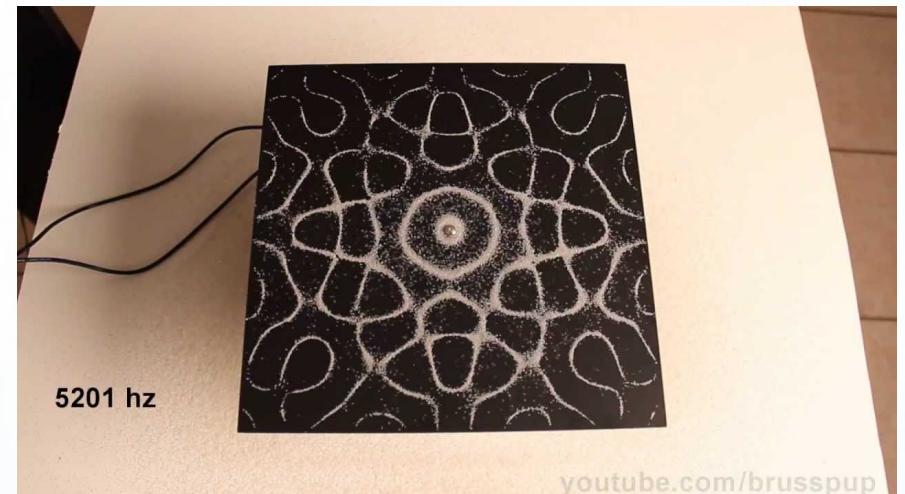
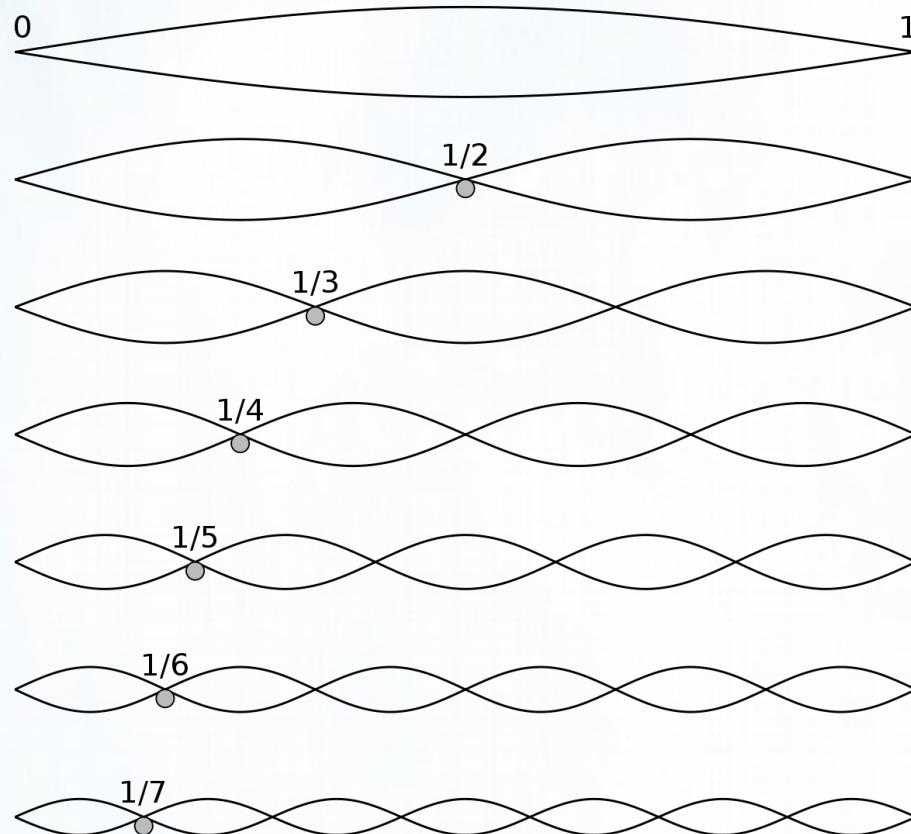
Einstein: “I, at any rate, am convinced that He [God] does not throw dice!”



Bohr: “Einstein, stop telling God what to do!”



Waves in different dimensions



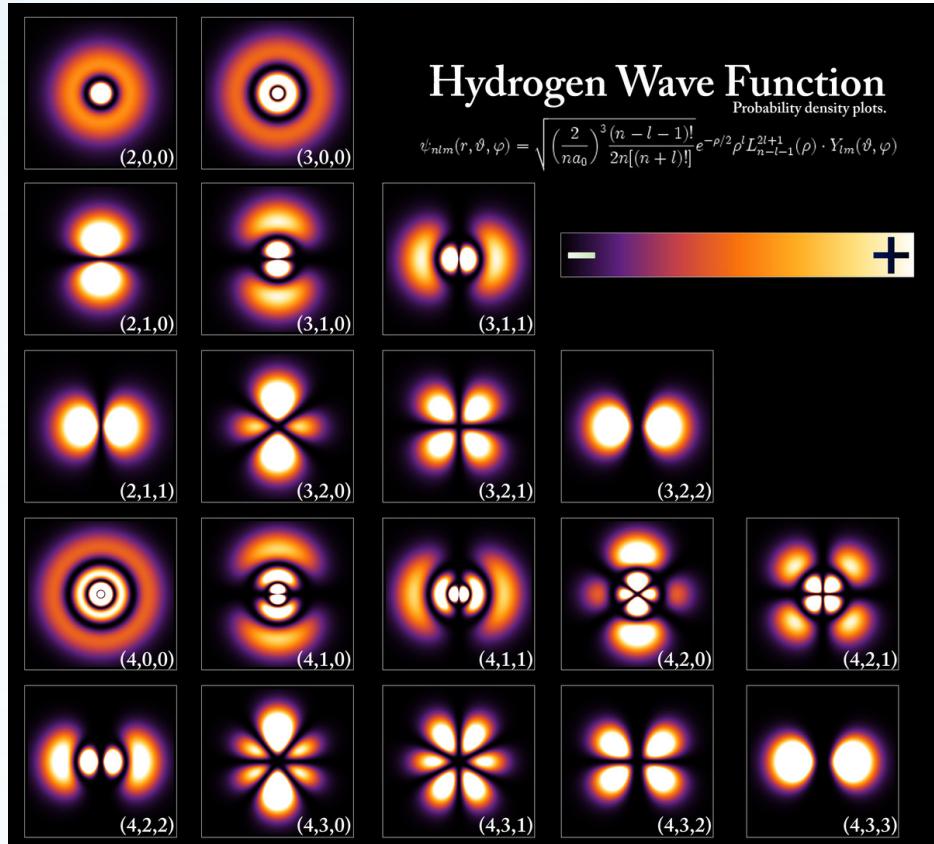
youtube.com/brusspup



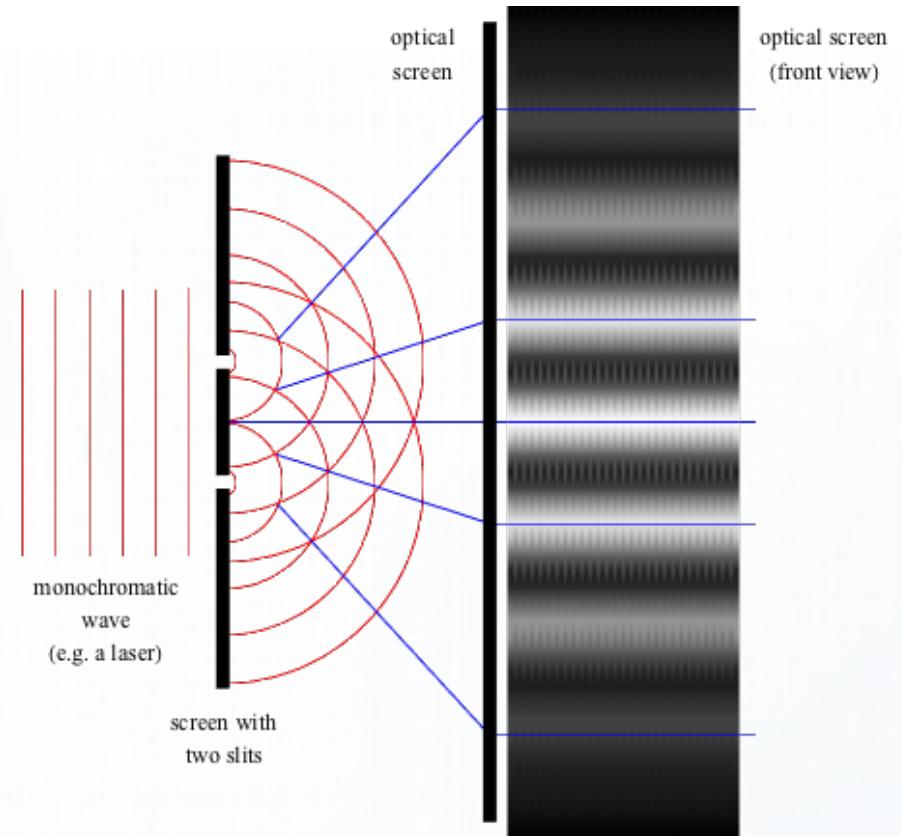
Wave Interference pattern



Probabilistic Universe



$$i\hbar \frac{\partial \psi}{\partial t} + \frac{\hbar^2}{2m} \nabla^2 \psi - V\psi = 0$$



Agency is allowed in a probabilistic universe.

2 Nephi 2:14-16, 24-27

14 And now, my sons, I speak unto you these things for your profit and learning; for there is a God, and he hath created all things, both the heavens and the earth, and all things that in them are, **both things to act and things to be acted upon.**

15 And to bring about his eternal purposes in the end of man, after he had created our first parents, and the beasts of the field and the fowls of the air, and in fine, all things which are created, it must needs be that there was an opposition; even the forbidden fruit in opposition to the tree of life; the one being sweet and the other bitter.

16 Wherefore, **the Lord God gave unto man that he should act for himself.** Wherefore, man could not act for himself save it should be that he was enticed by the one or the other.

24 But behold, **all things have been done in the wisdom of him who knoweth all things.**

25 Adam fell that men might be; and men are, that they **might have joy.**

26 And the Messiah cometh in the fulness of time, that he may redeem the children of men from the fall. And because that they are redeemed from the fall they have become free forever, knowing good from evil; **to act for themselves and not to be acted upon**, save it be by the punishment of the law at the great and last day, according to the commandments which God hath given.

27 Wherefore, men are free according to the flesh; and all things are given them which are expedient unto man. And they are free to choose liberty and eternal life, through the great Mediator of all men, or to choose captivity and death, according to the captivity and power of the devil; for he seeketh that all men might be miserable like unto himself.

D&C 93:24, 29-33

24 And truth is knowledge of things as they are, and as they were, and as they are to come.

29 Man was also in the beginning with God. Intelligence, or the light of truth, was not created or made, neither indeed can be.

30 **All truth is independent in that sphere in which God has placed it, to act for itself,** as all intelligence also; otherwise there is no existence.

31 Behold, here is the agency of man, and here is the condemnation of man; because that which was from the beginning is plainly manifest unto them, and they receive not the light.

32 And every man whose spirit receiveth not the light is under condemnation.

33 For man is spirit. The elements are eternal, and spirit and element, inseparably connected, **receive a fulness of joy.**

Spirit matter may be as simple as a quantum state.

D&C 131:6-8

6 It is impossible for a man to be saved in ignorance.

7 There is no such thing as immaterial matter. **All spirit is matter**, but it is more fine or pure, and can only be discerned by purer eyes;

8 We cannot see it; but when our bodies are purified we shall see that it is all matter.

1 Nephi 10:19

19 For he that diligently seeketh shall find; and the mysteries of God shall be unfolded unto them, by the power of the Holy Ghost, as well in these times as in times of old, and as well in times of old as in times to come; wherefore, the course of the Lord is **one eternal round**.

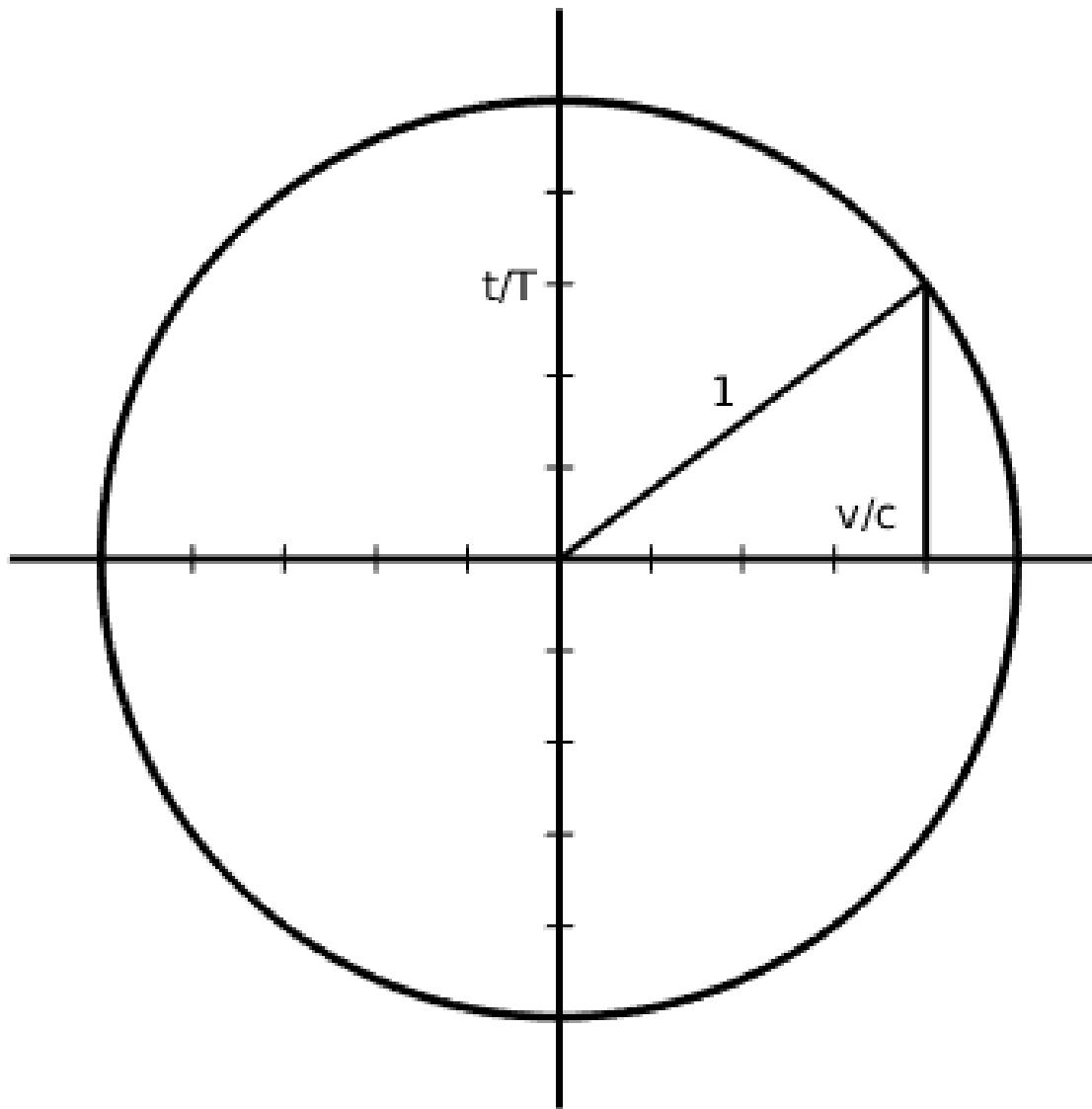
2 Peter 3:8-9

8 But, beloved, be not ignorant of this one thing, that one day is with the Lord as a thousand years, and a thousand years as one day.

9 The Lord is not slack concerning his promise, as some men count slackness; but is longsuffering to us-ward, not willing that any should perish, but that all should come to repentance.

8 But, beloved, be not ignorant of this one thing, that one day is with the Lord as an **eternity**, and an **eternity** as one day.

One Eternal Round



D&C 88:46-51

46 Unto what shall I liken these kingdoms, that ye may understand?

47 Behold, all these are kingdoms, and any man who hath seen any or the least of these hath seen God moving in his majesty and power.

48 I say unto you, he hath seen him; nevertheless, he who came unto his own was not comprehended.

49 The light shineth in darkness, and the darkness comprehendeth it not; nevertheless, the day shall come when you shall comprehend even God, being quickened in him and by him.

50 Then shall ye know that ye have seen me, that I am, and that I am the true light that is in you, and that you are in me; otherwise ye could not abound.

51 Behold, I will liken these kingdoms unto a man having a field, and he sent forth his servants into the field to dig in the field.

D&C 88:52-59

52 And he said unto the first:
Go ye and labor in the field, and
in the first hour I will come unto
you, and ye shall behold the joy
of my countenance.

53 And he said unto the
second: Go ye also into the
field, and in the second hour I
will visit you with the joy of my
countenance.

54 And also unto the third,
saying: I will visit you;

55 And unto the fourth, and so
on unto the twelfth.

56 And the lord of the field went unto
the first in the first hour, and tarried
with him all that hour, and he was
made glad with the light of the
countenance of his lord.

57 And then he withdrew from the first
that he might visit the second also, and
the third, and the fourth, and so on
unto the twelfth.

**58 And thus they all received the
light of the countenance of their
lord, every man in his hour, and in
his time, and in his season—**

59 Beginning at the first, and so on
unto the last, and from the last unto
the first, and from the first unto the
last;

D&C 88:60-61,66-68

60 Every man in his own order, until his hour was finished, even according as his lord had commanded him, that his lord might be glorified in him, and he in his lord, that they all might be glorified.

61 Therefore, unto this parable I will liken all these kingdoms, and the inhabitants thereof—every kingdom in its hour, and in its time, and in its season, even according to the decree which God hath made.

66 Behold, that which you hear is as the voice of one crying in the wilderness—in the wilderness, because you cannot see him—my voice, because my voice is Spirit; my Spirit is truth; truth abideth and hath no end; and if it be in you it shall abound.

67 And if your eye be single to my glory, your whole bodies shall be filled with light, and there shall be no darkness in you; and that body which is filled with light comprehendeth all things.

68 Therefore, sanctify yourselves that your minds become single to God, and the days will come that you shall see him; for he will unveil his face unto you, and it shall be in his own time, and in his own way, and according to his own will.

Prayer and Agency

As soon as we learn the true relationship in which we stand toward God (namely, God is our Father, and we are His children), then at once prayer becomes natural and instinctive on our part. Many of the so-called difficulties about prayer arise from forgetting this relationship. Prayer is the act by which the will of the Father and the will of the child are brought into correspondence with each other. The object of prayer is not to change the will of God but to secure for ourselves and for others blessings that God is already willing to grant but that **are made conditional on our asking for them.** Blessings require some work or effort on our part before we can obtain them. Prayer is a form of work and is an appointed means for obtaining the highest of all blessings.

The Foreknowledge of God and Agency

Ether 2:22-23

22 And he cried again unto the Lord saying: O Lord, behold I have done even as thou hast commanded me; and I have prepared the vessels for my people, and behold there is no light in them. Behold, O Lord, wilt thou suffer that we shall cross this great water in darkness?

23 And the Lord said unto the brother of Jared: What will ye that I should do that ye may have light in your vessels? For behold, ye cannot have windows, for they will be dashed in pieces; neither shall ye take fire with you, for ye shall not go by the light of fire.

Enos 1:15-16

15 Wherefore, I knowing that the Lord God was able to preserve our records, I cried unto him continually, for he had said unto me: Whatsoever thing ye shall ask in faith, believing that ye shall receive in the name of Christ, ye shall receive it.

16 And I had faith, and I did cry unto God that he would preserve the records; and he covenanted with me that he would bring them forth unto the Lamanites in his own due time.

D&C 50:21-24,27-29

21 Therefore, why is it that ye cannot understand and know, that he that receiveth the word by the Spirit of truth receiveth it as it is preached by the Spirit of truth?

22 Wherefore, he that preacheth and he that receiveth, understand one another, and both are edified and rejoice together.

23 And that which doth not edify is not of God, and is darkness.

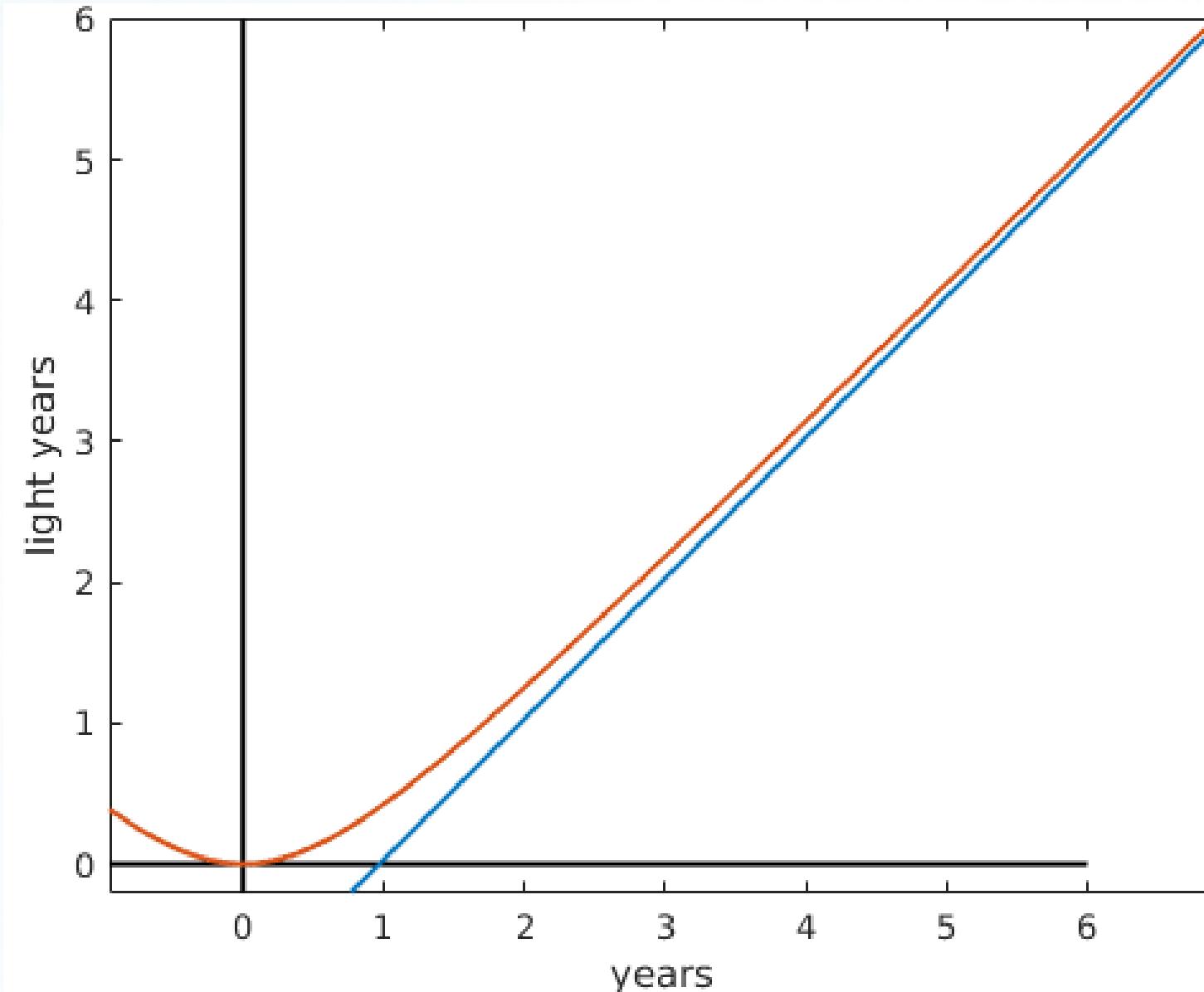
24 That which is of God is light; and he that receiveth light, and continueth in God, receiveth more light; and that light groweth brighter and brighter until the perfect day.

27 Wherefore, he is possessor of all things; for all things are subject unto him, both in heaven and on the earth, the life and the light, the Spirit and the power, sent forth by the will of the Father through Jesus Christ, his Son.

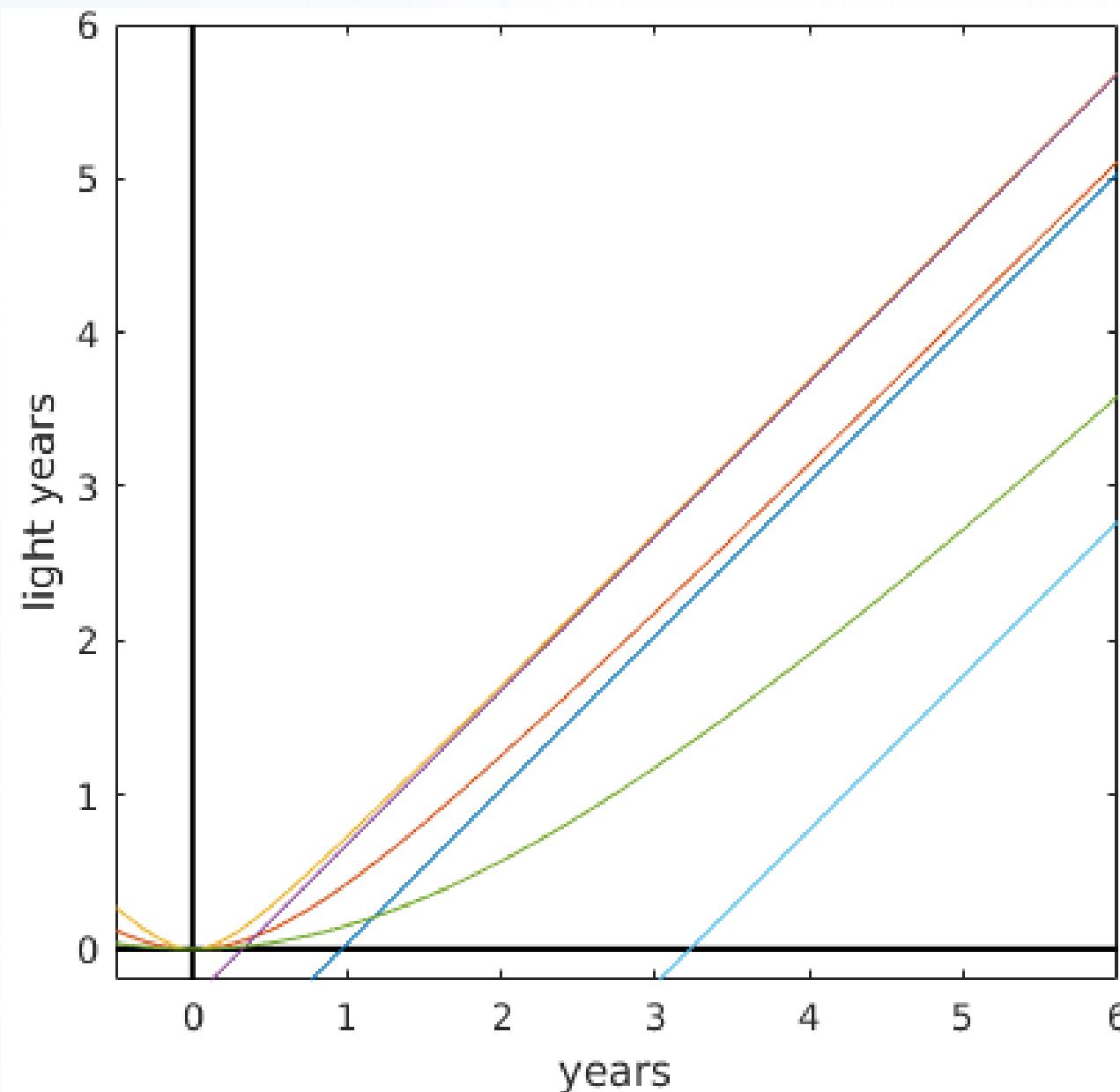
28 But no man is possessor of all things except he be purified and cleansed from all sin.

29 And if ye are purified and cleansed from all sin, ye shall ask whatsoever you will in the name of Jesus and it shall be done.

Approaching the Speed of Light



Approaching the Speed of Light at Different Rates



2 Nephi 9:7

7 Wherefore, it must needs be an infinite atonement—save it should be an infinite atonement this corruption could not put on incorruption. Wherefore, the first judgment which came upon man must needs have remained to an endless duration. And if so, this flesh must have laid down to rot and to crumble to its mother earth, to rise no more.

2 Nephi 31:20

20 Wherefore, ye must press forward with a steadfastness in Christ, having a perfect brightness of hope, and a love of God and of all men. Wherefore, if ye shall press forward, feasting upon the word of Christ, and endure to the end, behold, thus saith the Father: Ye shall have eternal life.

How God Uses Agency

God's chief way of acting is by persuasion and patience and long-suffering, not by coercion and stark confrontation. He acts by gentle solicitation and by sweet enticement. He always acts with unfailing respect for the freedom and independence that we possess. ["The Golden Thread of Choice," Ensign, November 1989, p. 18]

Know This, That Every Soul Is Free

He'll call, persuade, direct aright,
And bless with wisdom, love, and light,
In nameless ways be good and kind,
But never force the human mind.

Hymn 240

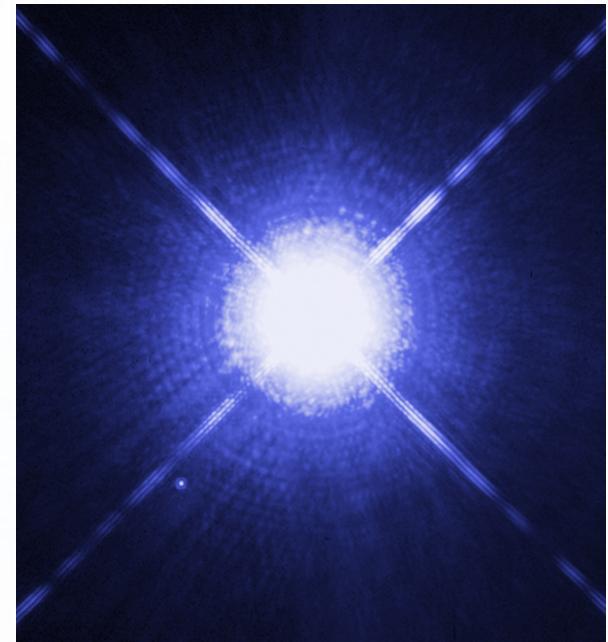
Current Location of Kolob

Kolob:

Right ascension 06h 45m 08.917s

Declination $-16^\circ 42' 58.02''$

Distance 8.60 ± 0.04 light years

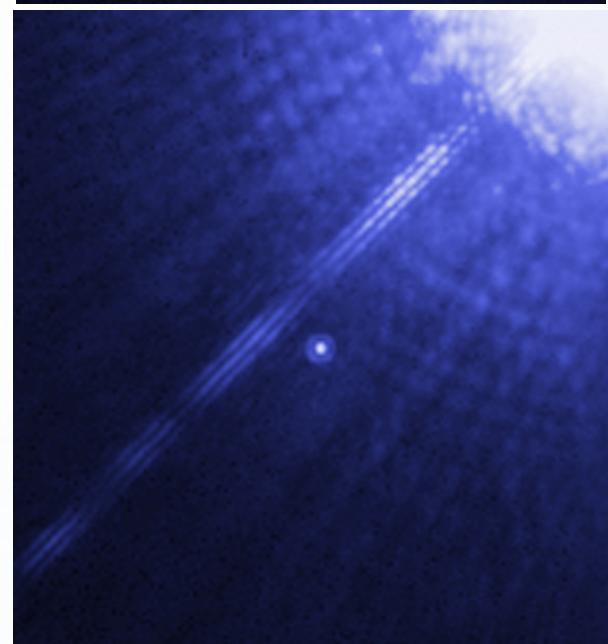


The Planet that orbits Kolob:

Right ascension 06h 45m 09.0s

Declination $-16^\circ 43' 06''$

Distance 8.60 ± 0.04 light years



A detailed image of a nebula in deep space. The nebula is primarily composed of glowing blue and green gases, with intricate filaments and wisps extending across the frame. A bright, multi-colored star cluster is visible in the center-right, emitting a intense glow that fades into the surrounding nebula. Numerous smaller stars of varying brightness are scattered throughout the dark, black void of space.

The End