Quasar Hypothesis

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Abstract

A quasar is a star-like object having a hydrogen emission line with a large redshift. This hypothesis explains the quasar's observed behaviors.

Contents

1 Introduction

A quasar is a star-like object having a hydrogen emission line with a redshift which was unusual for several reasons. This hypothesis explains the quasar's observed behaviors. There are several which are notable.

Many quasars had a very large redshift.

Many quasars seem to be very bright for their calculated distance. The large redshift implied a large distance. Potentially their brightness is not unusual but the distance is wrong.

Halton Arp observed the quasar red shifts appeared quantized or in repeated increments rather in just random, varying amounts. He also observed similar red shift values could appear in quasars on opposite sides along a Seyfert galaxy axis. This implied the redshift might have an intrinsic characteristic rather than a redshift due to an expected random velocity.

2 Terminology

2.1 Redshift

There is a separate paper by this author describing the causes and interpretations of a redshift. This reference includes some descriptions of a spectrum analysis. There is no reason for this paper to duplicate here the text written by this author in another paper.

pdf-link: Clarifying Redshifts

A summary of the other paper's conclusion for this paper:

A galaxy's redshift cannot be used for either velocity or distance. The galaxy's redshift is only an indicator of hydrogen in the intergalactic medium so its redshift indicates nothing about the galaxy.

A quasar is observed having a hydrogen Lyman-alpha emission line with a redshift. This redshift indicates the velocity of this atom when emitting that wavelength.

This atom's emission line'sredshift provides no detail about the quasar, such as its velocity or distance.

If the quasar were moving to exhibit the Doppler effect its entire spectrum must shift, not only one wavelength of one emission line. Images of a quasar spectrum show the lowest wavelengths intact, though the Hydrogen Lyman-apha emission line is red shifted. With a high velocity quasar light source in recession these velocities should be shifted away but are not.

Therefore from a cosmological perspective regarding a quasar's velocity and distance the quasar redshift should be ignored. Its redshift is a behavior from an atom in the quasar vicinity.

However the quasar redshift requires an explanation even if not important beyond the quasar.

This paper will describe what information the redshift provides when associated with a quasar.

2.2 Quasar

A quasar is neither a star nor a galaxy.

excerpt from Wikipedia:

Quasars or quasi-stellar radio sources are the most energetic and distant active galactic nuclei (AGN).

They are quite small in comparison with the energy they put out. Quasars are not much larger than the Solar System. The mechanism of brightness changes probably involves relativistic beaming of jets pointed nearly directly toward us. The highest redshift quasar known (as of June 2011) has a redshift of 7.085, which means it is about 29 billion light-years from Earth. This estimate is made using the concept of comoving distance.

A quasar (also known as a quasi-stellar object abbreviated QSO) is an extremely luminous active galactic nucleus (AGN). [Its] energy is released in the form of electromagnetic radiation, which can be observed across the electromagnetic spectrum.

In 1963, a definite identification of the radio source 3C 48 with an optical object was published by Allan Sandage and Thomas A. Matthews. Astronomers had detected what appeared to be a faint blue star at the location of the radio source and obtained its spectrum, which contained many unknown broad emission lines. The anomalous spectrum defied interpretation.

Schmidt was able to demonstrate that these were likely to be the ordinary spectral lines of hydrogen redshifted by 15.8 percent—at the time, a high redshift (with only a handful of much fainter galaxies known with higher redshift). If this was due to the physical motion of the "star", then 3C 273 was receding at an enormous velocity, around 47,000 km/s, far beyond the speed of any known star and defying any obvious explanation. Nor would an extreme velocity help to explain 3C 273's huge radio emissions.

(excerpt end)

my summary: The quasar generates a broad spectrum of synchrotron radiation (mentioned above) but the quasar has a noticeable hydrogen emission line red shifted indicating the hydrogen atom is moving at 'an extreme velocity.'

A quasar is not a cohesive light source, but its spectrum is the summation of many objects, including its AGN and all the surroounding stars, though possibly obscurred by dust which might be common among quasars.

Only a cohesive light source can have its entire spectrum affected by the Doppler effect. An atom or star can exhibit a redshift but not a quasar or galaxy.

reference:

link: Quasar

2.3 Plasmoid

Wal Thornhill povides an excellent description of a plasmoid and its jets, as observed in the M87 galaxy whose plasmoid was imaged in radio fre-

quency with much publicity, in April 2019.

reference:

youtube-link: Wal Thornhill: Black Hole or Plasmoid? — Space News

3 Arp's Observations

Halton Arp observed quasars with similar red shifts could appear in pairs around a Seyfert galaxy, as if from their parent. Their red shifts seem to drop in quantized increments as the objects reached a greater distance from their parent. Both quasars and BL Lac objects could be associated with the same parent Seyfert galaxy but the BL Lac objects have no hydrogen emission line to compare red shifts.

4 BeppoSAX study of quasars

This study concluded the quasar has an X-ray synchrotron radiation source in its AGN, not a black hole and a hot accretion disk.

link: Quasar study by BeppoSAX

The study concluded quasars and BL Lac objects have the same AGN for its X-ray source.

5 Eric Lerner's Quasar

In his book, The Bang Never Happened, Eric Lerner had a section titled 'A Model of a Quasar' and there are other mentions of a quasar. Figure 6.14 in my copy of the book mentions a plasmoid and its jets. I agree with his plasmoid explanation.

There is no explicit description of the mechanism for the observed redshift of a quasar.

Much earlier in the book, in a section titled' Measuring the distance to a galaxy' there is never doubt but only apparent agreement that every redshift is due to velocity.

That assumption is a mistake. This author's paper cited above in Terminology - Redshift explains this mistake with redshifts. This author's referenced text does not require duplication again in this paper.

The quasar's redshift is not from the quasar's velocity. The redshift is from atoms in the jet.

Eric's quasar model is incomplete.

This paper presents a complete description of a quasar.

6 Basic Quasar Hypothesis

A quasar AGN is a plasmoid.

A quasar is a plasmoid with an unusual redshift in its spectrum.

An elliptical galaxy like (M87 can emit jets from its plasmoid in opposing directions along its axis. The plasmoid is a source of the broad spectrum synchrotron radiation.

These jets are described in the following section.

7 Extreme Redshift

The neutrons in the relativistic jet from the plasmoid decay into proton/electron pairs which immediately link to form a hydrogen atom. The electron in the new atom quickly relaxes to the atom's ground state which results in the Hydrogen Lyman-alpha emission line. This wavelength is in the ultraviolet range. Because the atom is moving at the instant of this emission the wavelength is shifted based on velocity and direction. The hydrogen atoms zooming away get a redshift so depending on velocity UV could become visible or infrared while those atoms zooming toward us get a blue shift so UV could become X-ray. In either case, the emission line from will be stronger with a larger number of atoms.

This atom's emission line is observed as the quasar's redshift.

Relativity claims matter cannot move faster than the speed of light. There has never been experimental evidence to support that assumption. A neutral hydrogen atom would have its motion affected by only the weak force of gravity or a collision.

The observation of hydrogen atoms indicating a velocity exceeding c clearly falsifies that assumption. This measurement is not an anomaly of a single observation but rather it is many different measurements for many quasars in different locations.

With one assumption in relativity demonstrated to be false, other unproven assumptions by relativity relevant to this limit are also in doubt. These include an increase in mass (possibly to infinite) or no elapsed time when a mass reaches the velocity of light.

8 Quantized Redshift

Over time with successive jets the plasmoid loses energy. That reduction is in increments due to the jet ejection process which includes a collapse and recovery. The jets are affected by the sequential decreases in the amount of energy in the plasmoid, not a simple linear reduction over a time span.

The motion of protons and electrons at extreme velocities requires a very strong magnetic field to accelerate those charged particles but they are tiny particles. From basic physics: acceleration = Force / mass.

As the strength of this magnetic field progressively weakens, its force results in less acceleration on the tiny protons and electrons.

The quasar's redshift is an indicator for the strength of the plasmoid's magnetic field which is generating the jets.

Arp observed this quantized behavior and attributed it to the age of the quasar. The behavior is from a magnetic field that decreases over time but that field change is not really due to the age of the quasar, but just the progressive release of electrical energy.

9 Conclusion

The observed behaviors of a quasar are explained. The AGN is a plasmoid like found in M87 which is known to have relativistic jets and is both a radio and X-ray source, via synchrotron radiation. The plasmoid jets provide the mechanism for the observed redshift which can appear quantized.

A quasar exhibits behaviors which can be explained by classical physics.

This hypothesis is impossible to test by the author as such a test of the quantized step reductions of a plasmoid energy would require special conditions here on Earth.

This hypothesis can be compared with alternate explanations for a quasar.