



Mawlana
Shaykh Nazim
Al-Haqqani
Home

Nur Muhamma

Secrets of Light
Muhammad Reality
Secrets of Creation
Secrets of The Throne

Sufi Meditation

Muraqabah

Sufi Energy **UPDAT**
Practices, Muraqaba
Divine Energy,
Prophetic &
Angelic Sufi
Meditation

Lataif of

The Heart

5 Levels of The Heart
9 Points Lataif
Chakras, Enneagram
Sufi Meditation Muraqaba
Sufi Energy
Enneagram Sufi
Meditation

Mystic Letters

Sufi Numerology
Abjad Table
29 muqatta'at
ilm Huroof science
of Numbers Letters

Secrets of **UPDAT**

Naqshbandi

Ancient Secrets of
Naqshbandi
Sufi Order

News & **UPDAT**

Contact Us

Events & Photos,

About

Naqshbandi
Sufi Way

Books Online



E=MC² Secrets of Laylat Qadir and source of Energy

by Shaykh Hisham Kabbani

If we take the two-bows length that the Prophet approached to the divine presence or smaller then **all the energy is focused on the center.**

That means even a small amount of energy focused on the center will be an infinite amount on the small dot in the center of the focus.

Then following up on this, when there is command from Allah, `amr, **salaamun min kulli amr**, and one meaning of `amr is

“**directed energy**” { Alif Meem Ra, Allahs Order to Muhammad to "The Rabb" Spiritual Authorities. }? That is directed energy to Sayyidina Muhammad? What is the hidden meaning of `amr, what is behind it? On the surface it is commandment, but there are hidden meanings behind it.

Allahumma salli ala Sayyidina Muhammad hatta yarda Sayyidina Muhammad.

Obey Allah, obey the Prophet (s) and obey those in authority.

Amr is always for Allah swt. Amr is as you said, is translated as command. But also it has another meaning, when you do something, they tell you do this it is a command. That is amr.

Amr also is every situation that involves you in your life. And it means also every smallest detailed elements that happens in this life and in the hereafter, it is amr. That is why we say umur ad=dunya, that means everything related to dunya, or issue that concern you, it is umur ad-dunya, pl of amr.

And we say umur al-akhira, it means everything related to akhira. It is not only command. It is everything at that involves our lives, dunya and akhira it is amr. So it is... since all these issues that concern us in dunya and in akhira they are brought to us thru angles, so they are carrying direct command to execute these issues that concern us to every individual has his own line of amr. And that is why, as it is described, that whole sphere that from every part of it this like shooting particles of energy reaching to the center, which means reaching to the focus, is that Allah swt from every side He is ordering angels to execute issues that concern humanity or concerns the universe.

And that is why he said, we have revealed it, **inna anzalnaahu fee laylatil-qadr** we have brought it down on the night of power. Qadr. Qadr is qudrah, power. Power is what energy.

{QDR = Qaf Power of Quran in Dunya to the R- Rabb}

So He is saying we sent it on the night of power, it means that power that cannot be described, because the Holy Qur'an cannot be described and he revealed it in a night that connate be described. And he repeated it 4

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times, in that surah laylat al-qadr { Laylat Night is the Ahkfa Point , Point of Annihilation where there is no light for manifestation }

“And what do you think about laylat al-qadr” “Laylat al-qadr is better than 1000 months.” Salaamun hiya hatta matla` il fajr. { From the Fana of Fajr to the reappearance at Ishraq }

Angels are descending and the spirit (ar-ruh) with kulli amr, from every direction. Like a sphere, as you described it, from every direction it is coming.

It means this whole universe that Allah swt created before it was coming up to appearance, He was as the Prophet (s) said, the first thing that Allah created is my light and he dumped it in the ocean of power.

The ocean of power is Laylat al-Qadr.

That is why he described laylat al-qadr... you have been crated your soul and I put it in bahr al-qudra spinning. The first that he created was the Prophet (s) `s light and it was spinning. Then it creates energy.

From every side I am sending to you, directing to your moving to you this energy this kind of power. To the center. The Prophet (s) is the focus.

When he was spinning everything that was coming, he was absorbing, and absorbing and spinning, that was producing more and more energy. That energy produced from Allah` s spinning and his soul, form that energy universes were created.

That is why He said, salaamun. Tanazalul malaikatuh feeha bi-idhni rabbihim min kulli amr.

And the spirit described here is a huge angel, it is not the souls of human beings. It is a huge angel that Allah created. The angels and that big angel are coming down from every direction. Not from every “command.” From every way possible Allah is sending them.

All of them with one direction to the Prophet and he is absorbing and when he absorbed, what he absorbed no one can absorb.

When he was spinning he was reducing this energy first absorbing it and reducing it to that level and then coming up with new energy that people can carry.

That is why he said salaamun, peace be upon that energy.

That is the example of Ibrahim when Nimrod thru him in the fire. Jibreel cam and asked if he needs help. He said, no Allah will help me. Then Allah said salaamun `ala Ibrahim.

What He said, peace. So when the Prophet (s) was in that ocean of power and getting all that heavenly energy, what did he say, salaamun.

Means it is going to be peaceful. You know these transformers, take 500 volts and reduce to 220. if you get it directly from source what happens, you burn.

So the Prophet (s) was the transformer of that energy.

So he was mc2. [Muhammadan Nur Allah Nur}he took that energy and reduce it formula it to a

mass multiply by the speed of light that is mc^2 .

Because the mass came from energy, as Prophet (s) was energy.

- So he was transforming that energy into a lower level.
- How was he transforming it, from energy transforming into mass multiplied by the speed of light.

It means if we have energy of 10, that mass is going to be small.

If that energy is 20 the mass will be higher.

Because speed of light doesn't change except slightly.

So Awliya'ullah when their mass becomes huge it means they have become loaded, loaded as they are mountains on earth. That is why Allah called the Awliya'ullah and scholars said, they are like mountains on earth.

And that is why Allah said, and a sign from us that we carried their descendants dhurriya in the laden ship, that ship, mashhoon.

You know what we call the electric charge or energy it is shuhna. That ship was full of those charges.

Who was that boat. It is not the boat of Sayyidina Nuh. The sign to them is that we carried their progeny in that boat. And that boat is Sayiddina Muhammad and he carried everything in it, mashhoon means loaded with all these electrical energy or charges. Every progeny is a shuhna, an electric charge.

That is why energy is equal to mc^2 .

- From energy Allah does not want that energy to be gone because it does not belong to human beings.
- It belongs to Allah swt where the Prophet (s) was carrying it, charged with it and then like a main source of electricity, thru the transformer of the Prophet (s) he reduced it to different battalions. What you have in the army? Battalion.

That is why he said, souls are like armies in battalions. So those who know each other come to each other. So the battalions are coming from the Prophet

(s) like charges. Like a transformer, when it gets power from the main source it does not go to one house, it goes to many houses, like a battalion receiving energy.

He was like a bundle (mishkat) the manifestation of Allah's light was the bundle carrying all these small lights transformers that each transformer is a group of people.

That is why you see these group of people come to each other, like one family they come together like shaykh with his mureeds.

So amr is not only command it is a command in two-sided. Amr is a command for that energy to move from the ocean of power, bahr al-qudrah. And from the Prophet (s) out, it becomes `umur al-dunya, issues of the dunya or issues of akhira, different situations of people that concern them in this life or in the next life.

That energy belongs to Allah and it has to go back. So when He sends that energy it reduces thru the Prophet (s) as mass multiplied by speed of light. When the mass disappears, when it is gone, when you take the mass out, what will it become? It becomes no more mass, zero.

[It is infinite]

There is no more mass there no where to reduce it down. So if you are on a sphere and shooting to the center, all on same distance, equidistance so they go and come back. And that is why awliyaullah when they become as they are going higher by Allah, their masses, not their physical mass, but they become very heavily loaded with electrical charges, meaning qudrah power, that is the miraculous power.

That is the power that Allah gave to the Prophet and he gave to them. So as they approach closer to the Prophet (s) , they become nothing in the presence of the Prophet (s) , then they become everything, because the Prophet (s) is everything. When they come there, they understand the real command [amr]. That is the real command.

Here there is no command **because no one listens.**


Only the Prophet (s) listens, when Sayyidina Jibreel comes to him. Not one of us can reach, except some rare Awliya'ullah. Not reaching what the prophet reached but reaching the footsteps.

Not here, this the artificial obedience and artificial amr.

The only one who really obeyed is the prophet.

That is why it was coming to me from Mawlana Shaykh, the importance of mc2. I was sleeping and I woke up before Fajr, and Mawlana was explaining what is energy is mc2.

He said, that energy is been like a laser that is being shot out, in every direction to reach one place and from that one place it goes out. Before it reaches that place we cannot explain it he said,. I woke up and he was explaining in my ear, I was hearing that.

{Qalam {  Al-Qadir , Lahut to Muhammad = Qul ya Muhammad }

From the moment it is shooted from bahr al-qudra to out to reach that place where it has to reach, the reality of the Prophet (s) , no one can understand it except the Prophet (s) . **That is the real amr.**

From the Prophet (s) down, Awliya'ullah down can understand. That is the imitational amr.

So when Allah wants back that amr, he made death on human beings. He wasn't that abd to be under his (own) command. Now abd cannot say "no." Because death no one can say "no."

Hatta yateeka al-yaqeen. You know the yaqeen that you cannot run away from Allah's command.

Inna lillahi wa inna ilayhi raji`oon.

Returning to that reality, mc2 is that reality in this universe. It means in every individual, in everything you see, energy=mc2. there are infinite number of mc2. is it not.? we are representing mc2. we are mc2. he was explaining, and I was hearing.

He said, human beings are mc2.

- when that mass { Body}that soul is in that mass, that mass has value.
- When that soul disappears that mass has no value. { You Bury it }
- The soul understands now. **Wa in min shayyin illa yusabih bihamidi.** Everything praises Allah even stones.

If you take that tasbih out that stone disappears.

Everything is appearing with that praises.

- We appearing because our masses are praising. { specifically the heart Praising of Al-Hay }
- When that praising goes away that body will disintegrates completely.
- Every mass has a living tongue.
- Because he said Wa in min shayyin illa yusabih bihamidiwa laakin laa tafqahoona tasbihahum ...

It means a rock is praising - it has a soul. If you remove the mass, the mass becomes less the soul

- So mc^2 is soul and in reality the soul is inside. We are not calculating it.
- Allah said, that everything praises.
- How do we calculate the mass?
- It means the mass is equal the body plus the soul it is not just the mass alone. It is a combination there.
- So when you eliminate the mass, then what is left is the soul multiplied by the speed of light.
- So energy is not lost, energy equals mass multiplied by the speed of light.
- We know the mass is in realty mass plus soul.
- So when the soul is gone, then the mass is not moving anymore.
- At that time Allah will load the soul with same weight of the mass that is left behind in order to keep the energy equal to mc^2 .
- so the soul becomes heavily loaded to equal what is left behind which the m, that is the mass plus the soul.
- so Allah will multiply the mass by same mass that was taken away, the soul leaving the body you know the yaqeen at that time.
- You reach the reality of certainty. W 'abud rabbuka hatta yateeaka al-yaqeen.

At that time you will be loaded to see, it will be loaded completely. Because energy cannot be lost. So that soul will now be able to see everything.

As death came.

So now that soul is able to see what you were not able to see when you were carrying that mass.

- But Awliya'ullah because they have been loaded they left behind their bodies, because they left behind their egos.
- That is why Prophet (s) said, Abu Bakr as-Siddiq, no concern to form, no body anymore.
- Then they will be loaded, they can see what cannot be seen. Then they can see with that energy.

For them they have body but no body. They can transform. Can be here in china, and in Malaysia, in Indonesia. That is why you can see their form.

They said to one wali of Baghdad saying things that cannot be accepted. Then they told him. He said "next time cut me with the sword." Next time on jumuah he was saying that cannot be accepted and they took their swords and cut him but he became transparent. crystal like water, shfafiyya. That sword had no effect on him, as if passing through light.

So the real `amr tanazal al-malaikatu war-ruhu bi idhni rabbihim min kulli `amr.

Then quickly he said, salaamun. Peace. Salamun

The Heart of Holy Quran 36.58 "Peace!" Salamun - a word (of salutation) from a Lord Most Merciful!

- If that peace comes on us, we cannot carry it, we will be destroyed completely.
- Salaamun hiya, peace that command, with it until the rising of the dawn.
- Until the tidings of the dawn? It means until the light comes.
- Until the reality of Muhammad appears. On the Day of Judgment.
- When the reality comes you know the amr. { Alif, Meem, Ra- Allah Essence to Muhammad {s} to -Al Rabb- rabbi alAAalameena -Spiritual Government}
- Reality comes in akhira. Then you know the real reality that is hidden. The imitational `amr is know.

May Allah forgive us and bless us and..

Bihurmatil fatiha.

- If the soul weight 1 and the mass is 100. the mass is heavier than soul.
- The soul might be whatever, minimal epsilon relative to the mass.
- So now when that heavy weight is gone, energy has to be equal mc^2 .
- so it means that there must be replacement for that heavy weight.
- Then the heavenly charges will be on the soul, to make the mass as it was before.
- So when the heavenly electric charges are burdened on it since they weigh nearly nothing.
- They become very huge and with that they can see what cannot be seen.
- That is why the wali when he leaves his mass behind Allah replaces it with a very powerful electrical charge, that is not actual electrical charge, that will allow the mass times light to equal energy.
- That is called heavenly mass if we like to call it that.

That will be applied to awliya that have it in dunya. That will be for unbelievers only in akhira, there they will see hellfire.

- At that time they will see yaqeen.

The Prophet (s) went to isra and miraj, Allah dressed him with that heavenly weight. He went with his body. That is a miracle. Only the Prophet (s) went with his body. Awliya cannot move with body.

- That is why they can transform in dunya, but one body must be in a particular place.
- That is why we say Mawlana shaykh is in body in Cyprus but the other manifestations, are manifestation of his own reality.
- Like mirror images. It shows hundreds of you and the mirror is manifestation of the real one.
- Like one thousand television and **only one camera** and you can see 1000s of you

You have one true existence which is illuminated by the light of Muhammad, but when it is reflected like thru mirrors, it is seen. And the reality is hidden too.

That reality is the source of the reflections. The reflections since they part of the reality are realities in themselves and they are realities **according to the level of the observer where they manifest.**

- Like Sayyidina ibn Arabi said, if not my hand, Nuh and his people would have drowned,

They said, how? Ulama began to question.

- Of course if you bring a cup of water, and you put your finger in it and take it out, what do you see? A drop.
- Is that drop from that water? Yes, so it is part of the water.
- Yet you can see it. If you put it back there it becomes the whole.
- A part is from the whole. So it cannot be seen anymore

So he said "I am a part of the whole, and the whole is sayyidina Muhammad.

- I am from blood and from spirituality an inheritor of the Prophet (s).

- So I entered back in my ocean.
- That is why I said, because of my hand, in reality that is the ocean that raised Sayyidina Nuh from drowning because I am part of the whole."

So the reflections are part of the whole and then the reality appears thru the reflection and they are realities but not the real reality.

- Just a there is secrete, hidden, most hidden. Different levels of heart. Secret for Naqshbandis, akhfa for Allah swt. Khafa for Prophet (s) .
- Reality, then reality of realities. So it is part of him but not the complete part. That is why he appears according to the level of those whom he appears to at different places.

That is an ocean of knowledge. They open we can enter, they don't open we are lost.

Most people do not realize is that what we see is at the [intersection of time and timelessness](#).

- And nuri muhammadi being the light of existence enables us to intersect with timelessness so we are able to perceive in time a portion of that realty.
- Meaning what we see is a reflection of what is inside.
- The same reality but with different intersections seen in different way.

So he put it in different technical English that can be understood.

He is the ocean. There is so much in what you say.

For example, *la hawla wa la quwwatta illa billah i...*

What most people don't knows that the word hawla and quwat are different in that the dimension of hawla is different than quwwah. Quwwah is the dimension of power and hawla is the dimension of ?

With permission.

Light changes when we perceive it.

- Light travels in wavefront.
- But when we perceive it, and perception is the same as the nuri Muhammad it becomes changeless, [it becomes a quanta, it become timeless](#).
- So whether it is the movement of an ant or anything it becomes timeless it stays in time.
- So what we perceive is the intersection of time and timelessness.
- Timeless is the manifestation of the fact that we don't observe it all the time.
- Allah and his angels observe it at all the time so if his gaze were to be withdrawn at any instant it would disappear.

My knowledge is a fraction of a fraction of a fraction....

They say they found on Mars water? [Mawlana is grinning]

[Dr. Nazeer: yes, they think that there was an ocean there. But I heard Mawlana Shaykh Nazim say at one time, that Mawlana Shaykh Abdullah in his Miraj saw that were as many worlds as there are pebbles of sand on a beach and each one had its own Qiyama{ Within One Grain of Sand are Billions of Atoms or Universes} . Shaykh Nazim says things that I have absolutely no idea what it means.]

Sayyidina Khidr asked sayyidina Jibreel how many Adams did you meet with?

So it came to his heart to ask Allah swt "how many universes are there?" So Allah said, "fly with all your

power.” He used to use only 2 wings to come to the prophet. So he flew with all 600 wings, he flew for 6000 years with full speed. And as he flew he saw crystal sand, and all of them, tiny tiny pebbles, very small and in the middle he saw a tree and a green bird. The bird goes every moment picks up one pebble, goes up the tree, eats the pebble and then goes down, picks another one and eats it. There is infinity. No way to count all these pebbles. Flying 700000 years and still unable to see except one small corner of that ocean of sand.

He said, that green bird is the Prophet (s) Muhammad and each pebble is a creation a universe.

And Muhammad is seal of messenger for all of them.

For earth we have 124000 Prophet (s). For all other earths they have 124000 Prophet (s) s but only Muhammad is the same for all of them. He is the seal of messenger for every creation. So where we can understand.

When you go back and leave your mass you will be loaded with heavenly commands and that way you can understand the amr.

Sayedena Muhammad Najm Thagib The Piercing Star {s} said follow anyone of my Sahabi They are Like Stars.

Awliya when they reach Enlightenment all creation will see that light as a Star.

What is a Star?

The basic difference between a star and a planet is that a star emits light produced in its interior by fusion reactions (nuclear `burning'), whereas a planet only shines by reflected light.

The **Sun { Galb}** is our own special star yet, as stars go, it is a very average star.

There are stars far brighter, fainter, hotter and cooler than the Sun. Basically, however, all the stars we can see in the sky are objects similar to the Sun.

The Sun (and any other star) is a great ball of gas held together by its own gravity. The force of gravity is continually trying to force the Sun towards its centre and if there were not some other force counteracting it the Sun would collapse.

The necessary outward pressure is produced by the radiation from the nuclear energy generation in the Sun's interior.

How do stars originate?

Stars form from concentrations in huge interstellar gas clouds. {amma}

These contract due to their own gravitational pull. As the cloud gets smaller it loses some of the energy stored in it as potential gravitational energy.

This is turned into heat which in the early days of the embryo star can easily escape and so the gas cloud stays cool.

As the cloud's density rises it gets more and more difficult for the heat to get out and so the **centre gets hot**. If the cloud is big enough the temperature rise is sufficient for **nuclear reactions to take place**.

This generates more heat and the `burning' of **hydrogen into helium** takes place, as in the Sun.

The object is then a star.

a Wali is Born

Galb/Sun

The Early Evolution of a Star

In its early stages the embryo star is still surrounded by the remains of the original gas cloud, from which it formed.

By this stage the cloud remnant takes the form of a disk around the star.

The radiation from the star gradually dissipates this disk, possibly leaving behind a system of smaller objects, planets.

The Main-Sequence

The star now settles down to a long period of stability while the hydrogen at its centre is converted into helium with the release of an enormous amount of energy.

This stage is called the main-sequence stage, a reference to the classical color-magnitude or

Most stars lie in a well defined band in the diagram and the only parameter that determines where in the band they lie is the star's mass.

The more massive a star is the quicker it **burns up its hydrogen and hence the brighter, bigger and hotter it is.**

The rapid conversion of hydrogen into helium also means that the hydrogen gets used up sooner for the more massive stars than for the smaller ones.

For a star like the Sun the main-sequence stage lasts about 10,000,000,000 years whereas a star 10 times as massive will be 10,000 times as bright but will only last 100,000,000 years.

A star one tenth of the Sun's mass will only be 1/10,000th of its brightness but will last 1,000,000,000,000 years.

Post Main-Sequence Evolution.

Stars do not all evolve in the same way. Once again it is the star's mass that determines how they change.

MEDIUM MASS STARS: Stars similar in mass to the Sun **burn** hydrogen into helium in their centres during the main-sequence phase but eventually there is no hydrogen left in the centre to provide the necessary radiation pressure to balance gravity.

The centre of the star thus contracts until it is hot enough for **helium to be converted into carbon.**

The hydrogen in a shell continues to **burn** into helium but the outer layers of the star have to expand.

This makes the star appear brighter and cooler and it becomes a red giant. Sir

During the red giant phase a star often loses a lot of its outer layers which are blown away by the radiation coming from below. Eventually, in the more massive stars of the group the carbon may be **burnt** to even heavier elements but eventually the energy generation will fizzle out and the star will collapse to what is called a **degenerate white dwarf**.

Sir Sir White

SMALL MASS STARS: Our knowledge of the evolution of these stars is purely theoretical because their main sequence stage lasts longer than the present age of the Universe, so none of the stars in this mass range has evolved this far!

We believe that the evolution will proceed as for the medium mass stars except that the temperature in the interior will never rise high enough for helium **burning** to start.

The hydrogen will continue to **burn** in a shell but will eventually be all used up. The star will then just get cooler and cooler ending up after about 1,000,000,000,000 years as a **black dwarf**. **The Khafa**

HIGH MASS STARS: There are very few stars with masses greater than five times the mass of the Sun but their evolution ends in a very spectacular fashion. As was said above, these stars go through their evolutionary stages very quickly compared to the Sun.

Like medium mass stars, they **burn** all the hydrogen at their centres and continue with a hydrogen **burning** shell and central helium **burning**.

They become brighter and cooler on the outside and are called red supergiants.

Carbon **burning** can develop at the star's centre and a complex set of element **burning** shells can develop towards the end of the star's life.

During this stage many different chemical elements will be produced in the star and the central temperature will approach 100,000,000 degrees Kelvin.

For all the elements up to iron the addition of more nucleons to the nucleus produces energy and so yields a small contribution to the balance inside the star between gravity and radiation.

To add more nucleons to the iron nucleus requires energy and so once the centre of the star consists of iron no more energy can be extracted.

The star's core then has no resistance to the force of gravity and once it starts to contract a very rapid collapse will take place.

The protons and electrons combine to give a core composed of neutrons and a vast amount of gravitational energy is released.

This energy is sufficient to blow away all the outer parts of the star in a violent explosion and the star becomes a supernova. { Khafa Secrets of Qiyama Zilzalahh Quaking of Mass }

The light of this one star is then as bright as that from all the other 100,000,000,000 stars in the galaxy. **Going to the Ahkfa the Black Holes.**

During this explosive phase all the elements with atomic weights greater than iron are formed and, together with the rest of the outer regions of the star are blown out into interstellar space.

The central core of neutrons is left as a neutron star which could be a pulsar.

What is remarkable about this is that the first stars were composed almost entirely of hydrogen and helium and there were no oxygen, nitrogen, iron, or any of the other elements that are necessary for life. These were all produced inside massive stars and were all spread throughout space by such supernovae events. We are made up of material that has been processed at least once, and probably several times, inside stars.

Binding energy

The basic building blocks of atoms are protons neutrons and electrons. Protons and neutrons can be split into quarks but this takes place at energies higher than are found in stars.

The binding energy of atomic nuclei plotted against the atomic number of the nuclei. Energy is released by the fusion of light elements into heavier elements (elements on the left) or the fission of heavy elements into lighter elements (elements on the right).

Iron is the highest element on the graph, and the most stable. It cannot release energy through either fusion or fission.

Protons carry a positive charge and reside with neutrons in the nucleus of an atom. At room temperature the atom contains the same number of electrons as there are protons in the nucleus, which makes the atom electrically neutral.

It is the electrons that define the physical and chemical properties of the elements as we experience them on Earth.

An atom of hydrogen has one proton and one orbiting electron while an atom of iron-56 has 26 electrons surrounding a nucleus containing 26 protons and 30 neutrons. The normal notation is ^{56}Fe . It is the number of protons that defines the identity of an element. For each element the number of neutrons can vary and atoms with the same number of protons but differing numbers of neutrons are referred to as isotopes. For example iron has stable isotopes with 28, 30 and 31 neutrons.

The neutrons and protons are held together in the nucleus by the 'strong force'.

The strong force only acts over very small distances but is able to overcome the electrostatic repulsion between protons.

The most tightly bound nuclei are those close to iron in the periodic table of elements. The tightness of this binding is measured by the binding energy per nucleon where 'nucleon' is a collective name for neutrons and protons.

It is also sometimes called the mass defect per nucleon. This reflects the fact that the total mass of the nucleus is less than the sum of the mass of the individual neutrons and protons that formed the nucleus.

The difference in mass is equivalent to the energy released in forming the nucleus. The graph plots binding energy as a function of atomic number or number of nucleons per atom.

The general decrease in binding energy beyond iron is caused by the fact that, as the nucleus gets bigger, the ability of the strong force to counteract the electrostatic force between the protons becomes weaker.

The peaks in binding energy at 4,8,16 and 24 nucleons is a consequence of the great stability of helium-4 a combination of two protons and two neutrons. The maximum binding energy at iron means that elements lighter than iron release energy when fused.

This is the source of energy in stars and hydrogen bombs. From the graph it can be seen that the greatest release of energy occurs fusing hydrogen to form helium. { Dhikr HUuuuu }

Elements heavier than iron only release energy when split, as was the case with the plutonium and uranium used in the first atomic bombs.

Elements heavier than iron are made in stars by capturing neutrons onto atomic nuclei. This takes place in some red giants and in supernovae explosions. A new isotope is created when an atom captures a neutron. If this isotope is unstable then a neutron can convert into a proton, releasing an electron.

This is called beta decay and is a form of radioactive decay also observed on Earth. By converting a neutron into a proton the atom has increased its atomic number by one and become the adjacent element in the periodic table.

It may then capture another neutron, and so on, so that using iron as seed nuclei it is possible to build all the elements heavier than iron in the periodic table.

The difference between element synthesis in red giants and supernovae is that in supernovae the flux of neutrons is greater and it is possible for the atom to capture a second, or third neutron, before it has a chance to beta-decay. This leads to the production of a different set of elements to those produced in red giants, where the flux of neutrons is much less.

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