WHAT ARE STARS MADE OF?

Stars are huge bodies of ionized gas (plasma). They generate energy and light thanks to nuclear reactions.

Nuclear reactions consist of converting H into He, releasing energy that radiates out into space.

In the beginning

75% H
24% He

CHEMICAL EVOLUTION OF STARS: STELLAR NUCLEOSYNTHESIS

Nuclear reactions take place inside stars to make the rest of the chemical elements.

PROTOSTAR

FIRST PHASE

Clouds of hydrogen (H) and helium (He) contract, increasing the density and temperature inside the star.

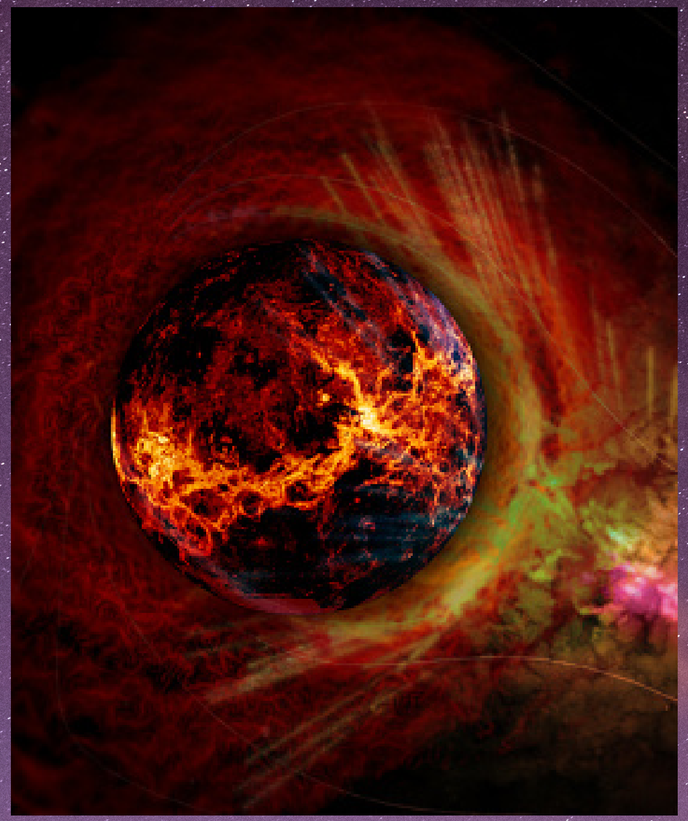
CHEMICAL EVOLUTION OF STARS: STELLAR NUCLEOSYNTHESIS

Nuclear furnaces: the rest of the chemical elements are formed until Fe is reached. It is like a fusion furnace where increasingly complex nuclear reactions take place.

CHEMICAL EVOLUTION OF STARS: STELLAR NUCLEOSYNTHESIS

When a massive star burns the nuclear reactions produce neutrons that easily bind to other nuclei and increase their mass. If the ensemble thus created is not stable, it will transmute and give rise to a new atomic element. It is thanks to this process that some elements, heavier than iron, are produced.

STARS ALSO DIE

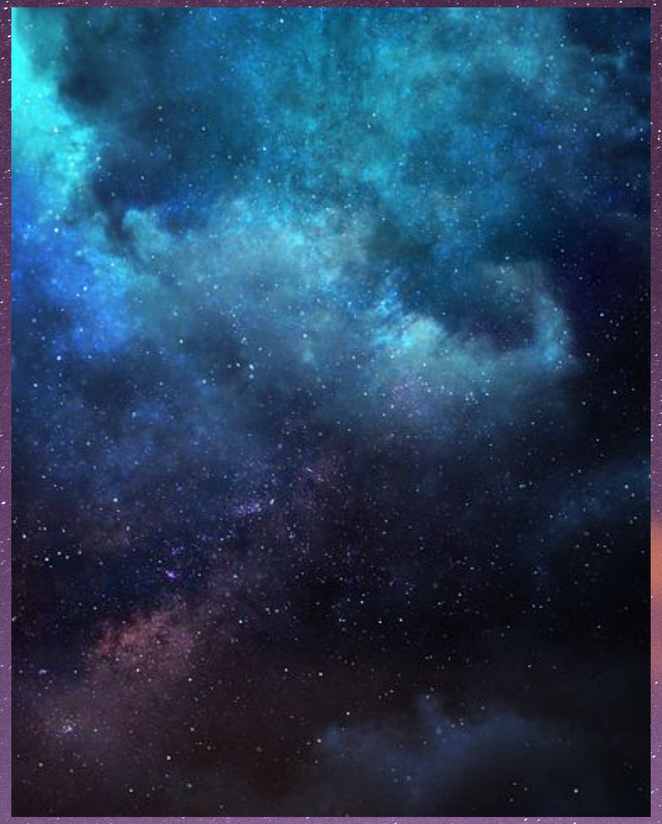


Their end depends on their initial mass.

Those similar to our sun become red giants, later planetary nebulae until they gradually fade away.

The most massive ones end up exploding violently in the form of supernovae, expelling a large amount of matter in the form of gas and dust and becoming a black hole or pulsar.

THE INTERSTELLAR MEDIUM

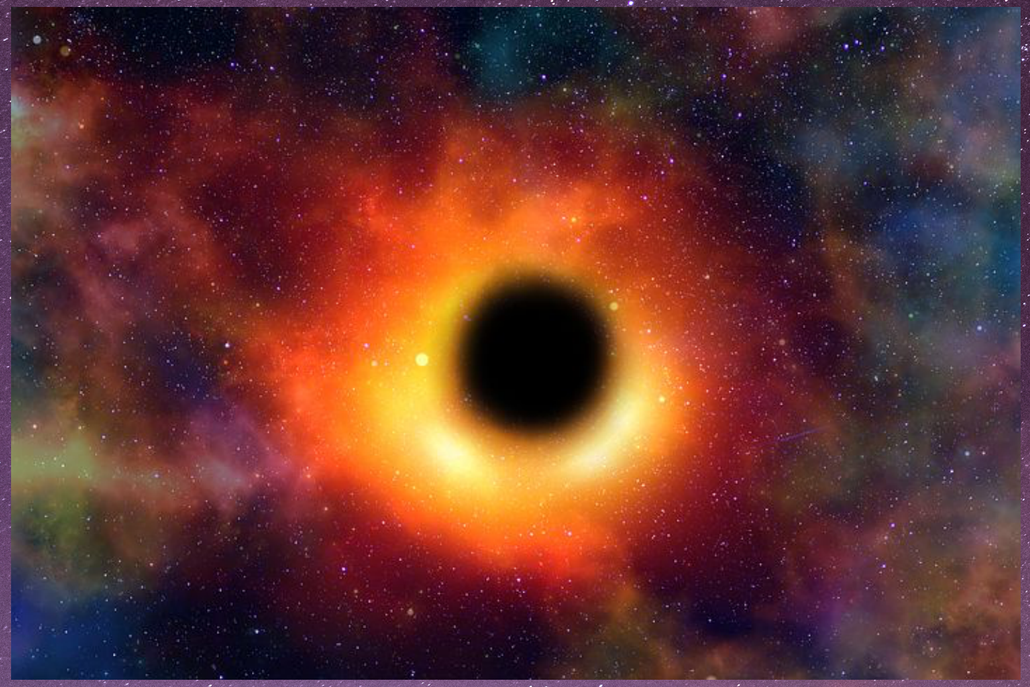


Matter that exists in a galaxy and does not form part of stars or star systems.

It is made up of gas and dust.

It redistributes the energy of the stars to longer wavelengths and depending on that wavelength and the types of atoms, it can show or hide different structures.

WHAT IS A BLACK HOLE?



It is such a big concentration of mass that it creates a gravitational force, so intense that not even light can escape from it.

WHAT IS A COMET?

Large objects made of dust and ice that orbit the Sun.

Best known for their long, streaming tails, these ancient objects are leftovers from the formation of the solar system 4.6 billion years ago.

DID YOU KNOW THAT...?

Due to long distance there is in the Universe, observe far away is such a travel back in time.

For instance, as light has a velocity finite, light takes to come to our planet:

- 8 minutes from the Sun
- 4 years from Proxima Centauri (the second star close to us)
- 25.000 years from Andromeda

So, have you ever thought that when you see a star shining it can be already dead?