



GOOD NIGHT
Collective





A Star is Born

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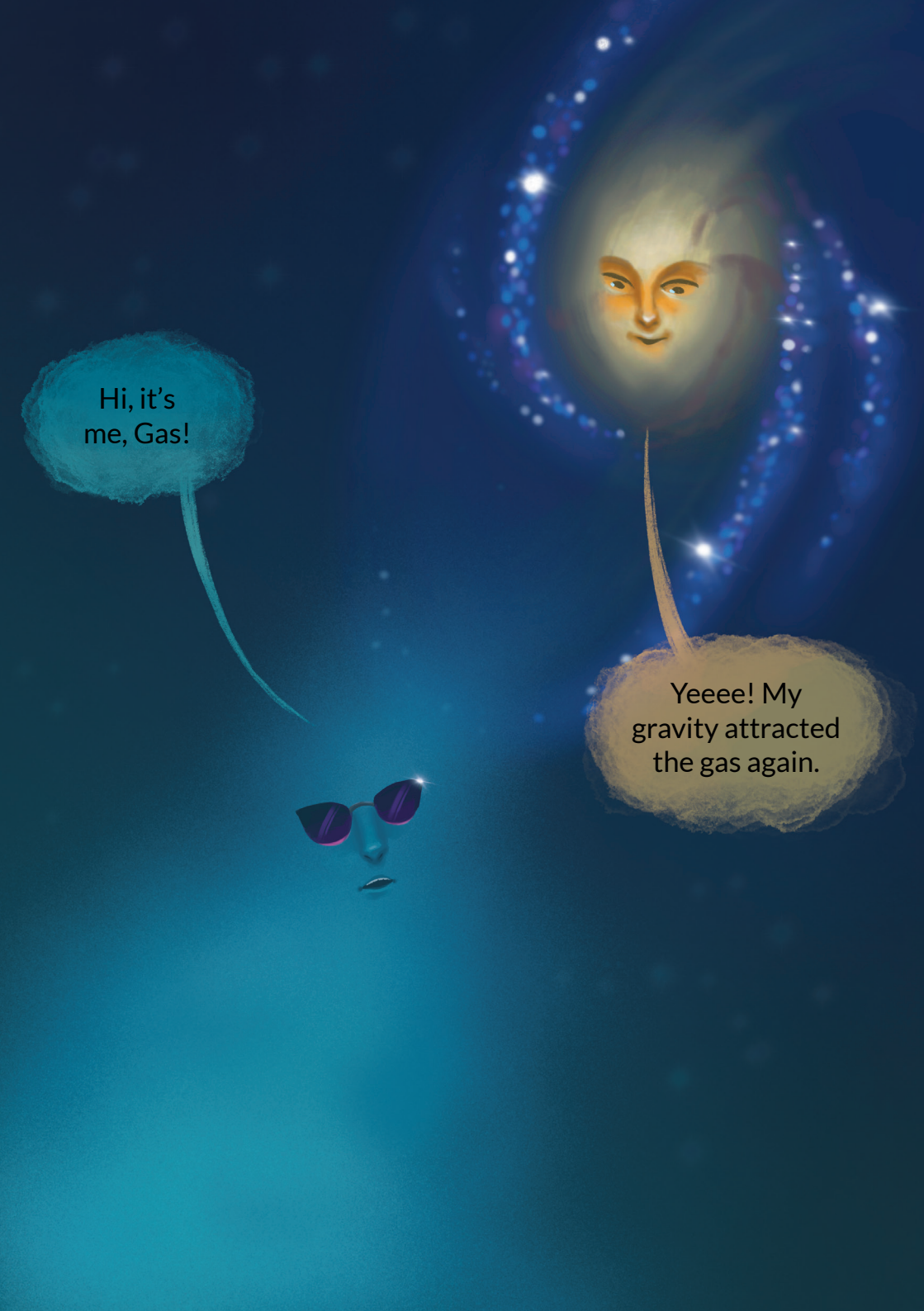
A short story about gas and dust forming
a star somewhere in the universe



A stylized illustration of a galaxy, specifically NGC 3034, depicted with a human-like face. The face is yellow with orange eyes, a nose, and a slight smile. The galaxy's spiral arms are represented by a trail of blue and white dots, giving it a dynamic, almost breathing appearance. The background is a deep blue space filled with numerous small, distant stars.

Galaxy NGC
3034, a few
Megaparsec away

About 100 mln
years ago



Hi, it's
me, Gas!

Yeeee! My
gravity attracted
the gas again.

This is gonna burn
my star formation
process. I will create
new baby stars again!



A few million
years later...



Why has nothing
changed?



I feel like there is
something unsettling
inside me.

ZUUUUUM!!!



I try to produce
stars but it's very
difficult...



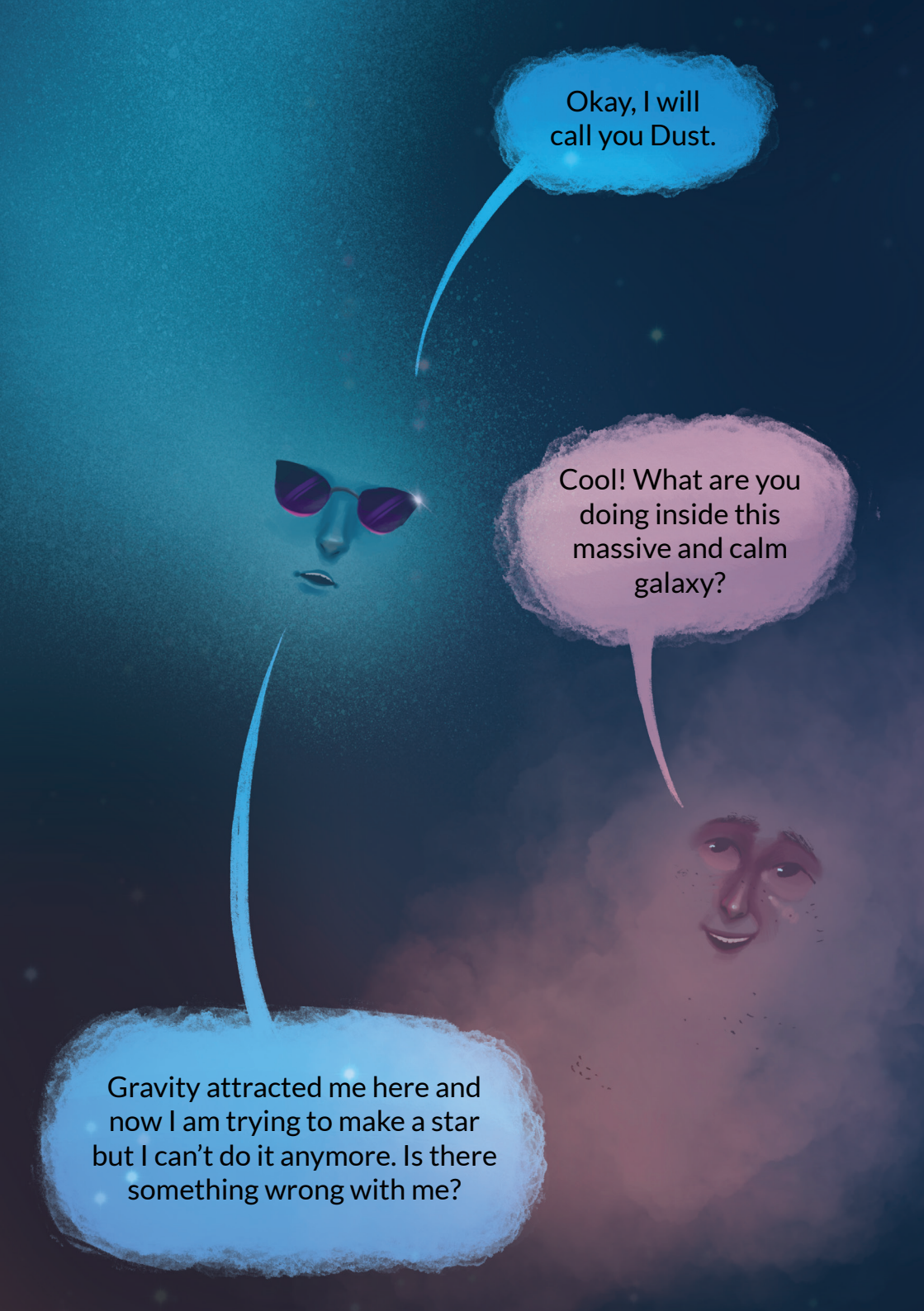
Later, somewhere inside
the galaxy's arm...



Hi, who are you?
I didn't notice
you before.

Hi! I am Grains,
Dust Grains.



A cartoon illustration of a face with sunglasses and freckles in a space setting. The face is positioned in the center-left of the frame, looking upwards and to the right. It has a neutral expression. The background is a dark blue space with a nebula-like texture and several small white stars. Three speech bubbles are present: one at the top right, one to the right of the face, and one at the bottom left. The speech bubble at the top right is yellow and contains the text 'Okay, I will call you Dust.' The speech bubble to the right of the face is pink and contains the text 'Cool! What are you doing inside this massive and calm galaxy?'. The speech bubble at the bottom left is yellow and contains the text 'Gravity attracted me here and now I am trying to make a star but I can't do it anymore. Is there something wrong with me?'.

Okay, I will
call you Dust.

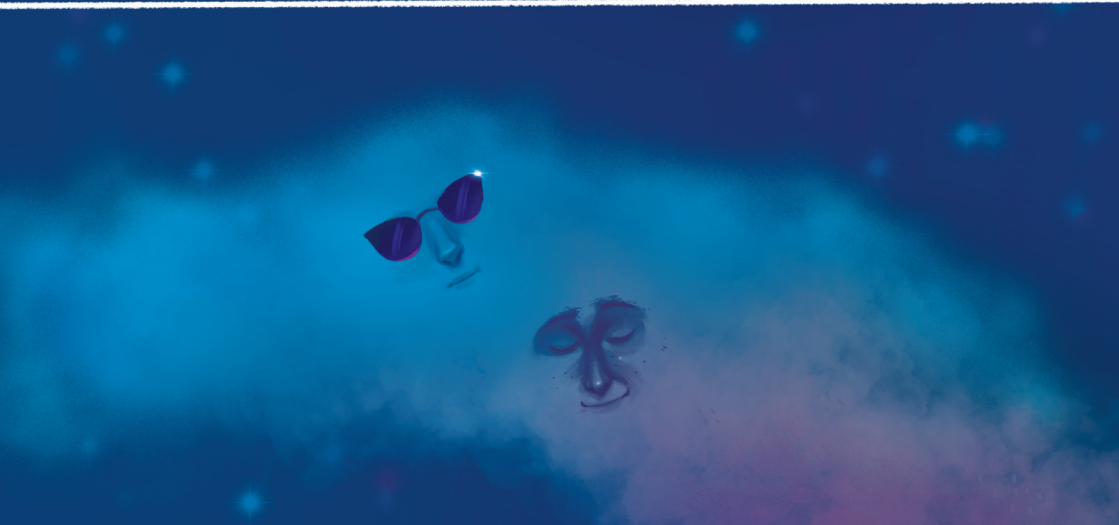
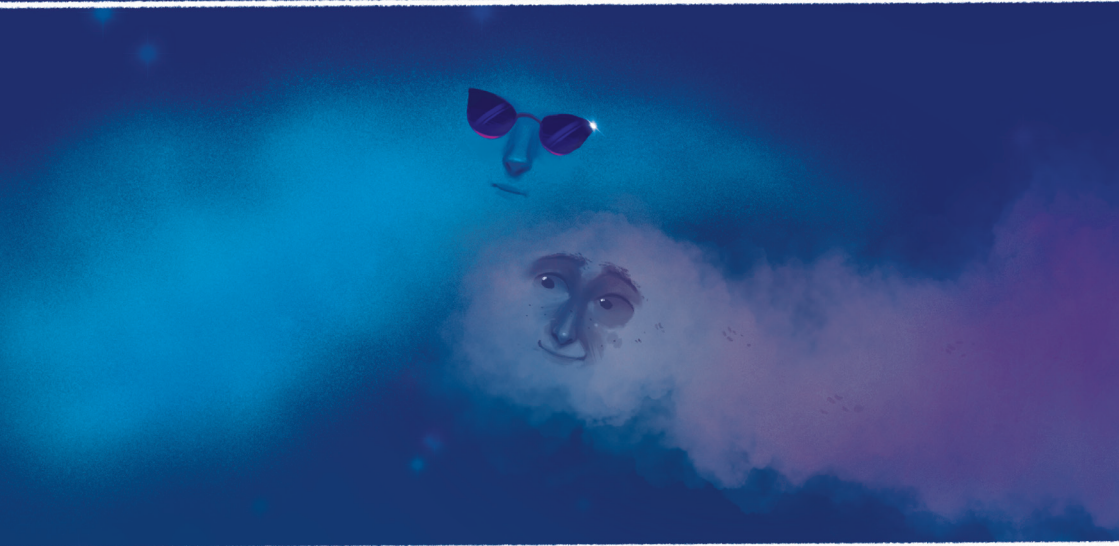
Cool! What are you
doing inside this
massive and calm
galaxy?

Gravity attracted me here and
now I am trying to make a star
but I can't do it anymore. Is there
something wrong with me?

A whimsical illustration set against a dark blue night sky with twinkling stars. In the center, a large, pale yellow face with a mustache and dark sunglasses is looking upwards. To the right, a large, billowing white cloud has a smiling face with large, expressive eyes. A speech bubble originates from the cloud's mouth, pointing towards the sunglasses-wearing face. Another speech bubble originates from the sunglasses-wearing face, pointing towards the cloud. The overall mood is playful and surreal.

Don't worry, it's just
your internal energy
which is preventing
the force of gravity
from collapsing. I will
help you with that

Can you help?
Really?





It tickles!

We are older than
you, Dusty Grain.
But okay, you can have
some of our energy.

Hey kids,
don't run!



Thanks dust, I feel
more relaxed. I think
now we can create
some stars together.

Yeah, I just took
some of your energy.
Now, it will be easier
to produce a star

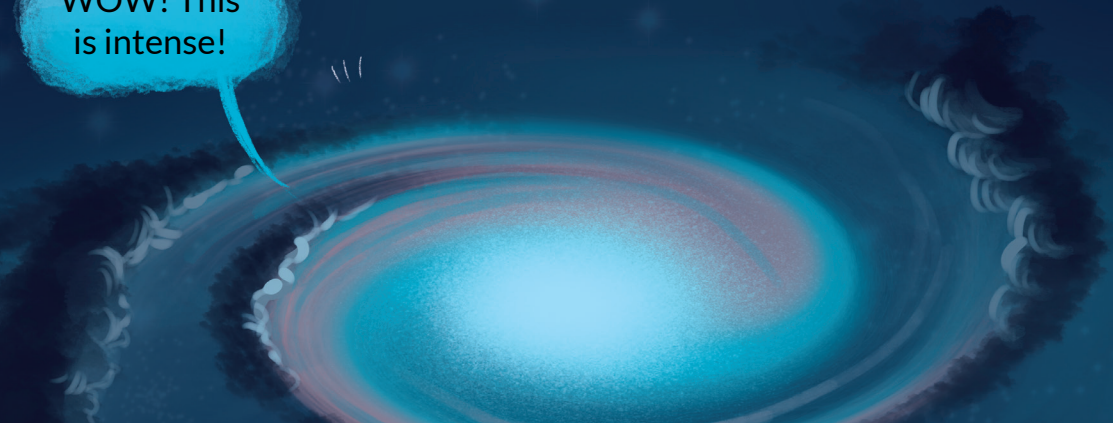


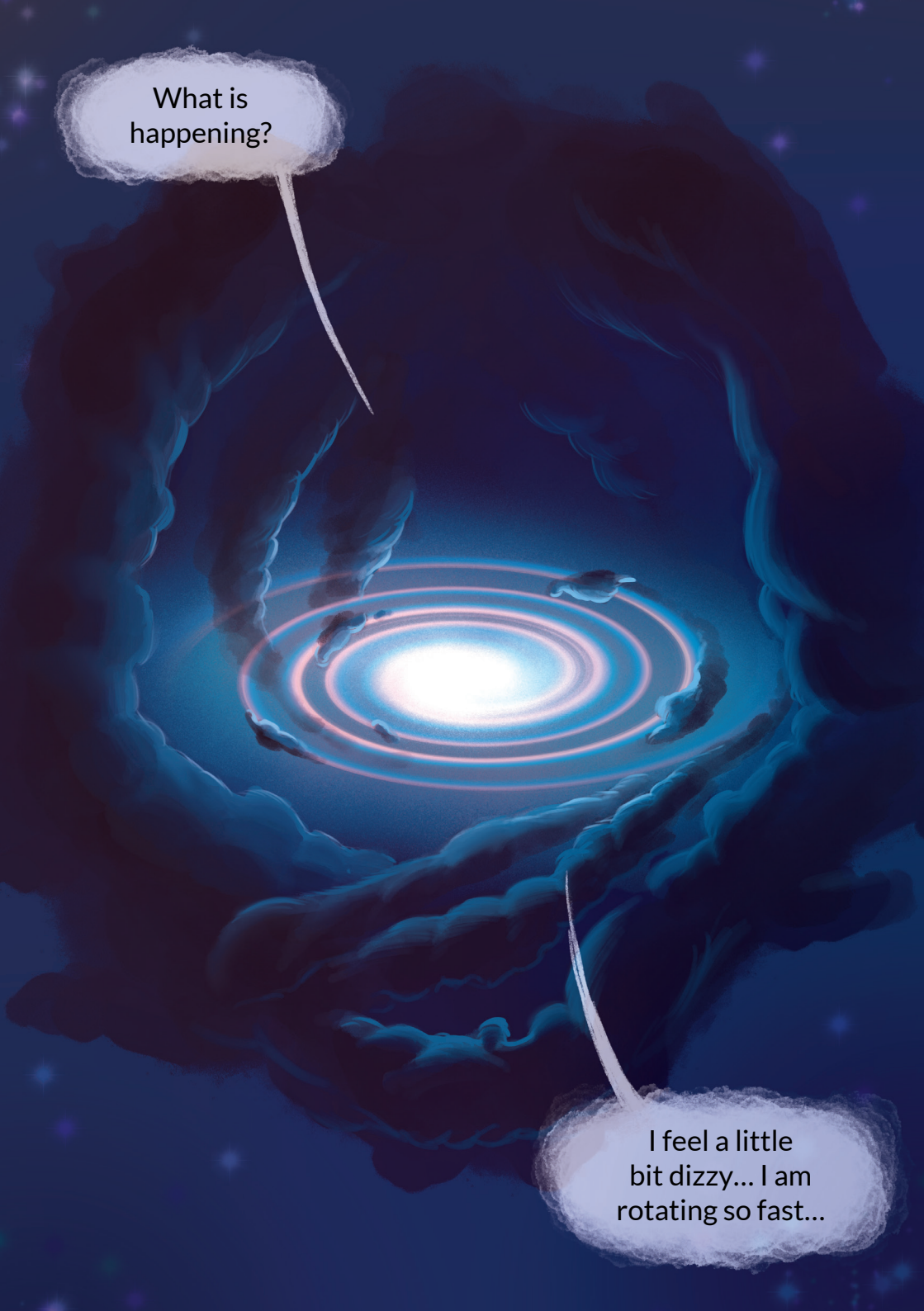
What is happening to our
molecular cloud? Are we
collapsing already?



Gravity is pulling
us together

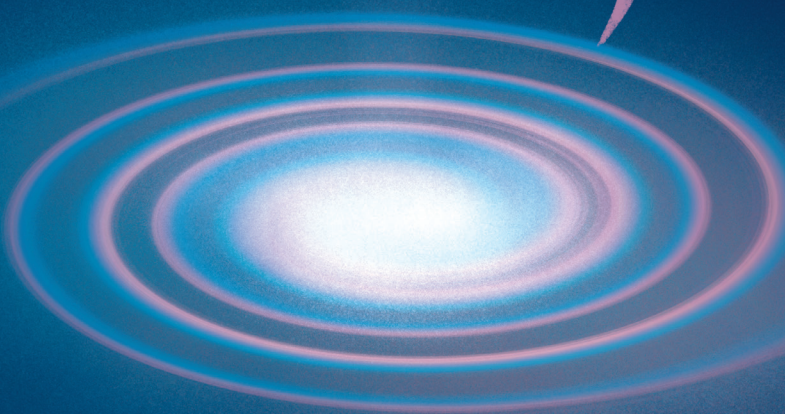
WOW! This
is intense!



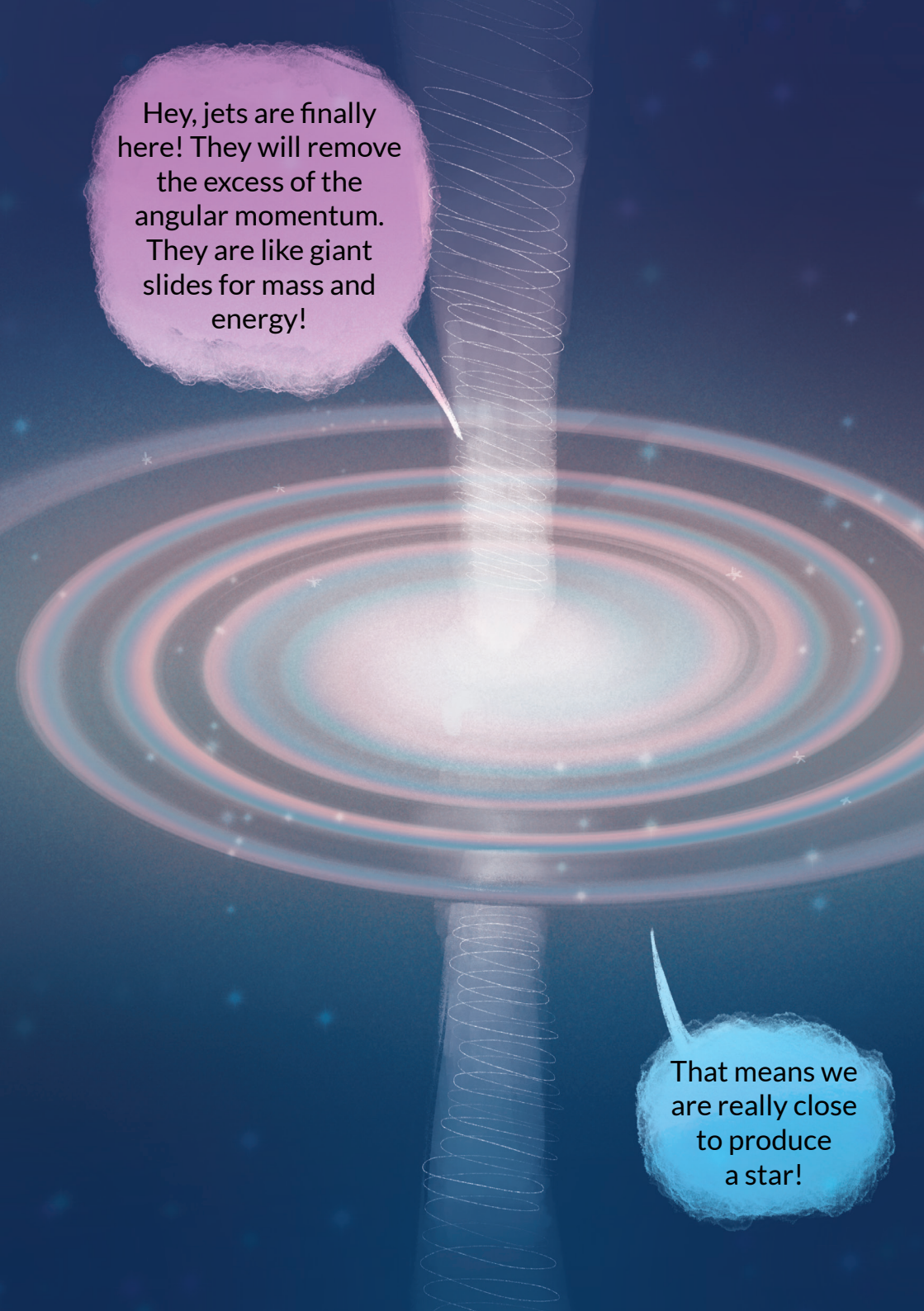
A cartoon illustration of a black hole. In the center is a bright, glowing white and yellow core, surrounded by several concentric rings of blue and purple light, representing the accretion disk. The entire scene is framed by dark, swirling clouds of gas and dust. Several small, dark figures of people are floating within the accretion disk. Two speech bubbles are present: one in the upper left and one in the lower right.

What is
happening?

I feel a little
bit dizzy... I am
rotating so fast...



We have an accretion
disk now, that's why it's
so fast right now!

A diagram of a protostar, showing a central glowing sphere with two large, flat, rotating accretion disks (protoprotoplanetary disks) on either side. The disks are composed of concentric rings of gas and dust, with a color gradient from blue at the outer edges to red and orange near the center. Two bright, narrow jets of gas and dust are shown emerging from the poles of the central protostar, extending vertically upwards and downwards. The background is a dark blue space filled with small white stars.

Hey, jets are finally here! They will remove the excess of the angular momentum. They are like giant slides for mass and energy!

That means we are really close to produce a star!



Finally, I can see
light there! is it
already a star?

The background is a deep blue space filled with numerous small, bright white stars. In the center-right, a bright white protostar is surrounded by a glowing, translucent blue protoplanetary disk. The disk has concentric rings, suggesting rotation. Two speech bubbles are present: a light blue one in the upper left and a light purple one in the lower right.

But why is it still
getting smaller?

It's still a
protostar. Gravity
pulls all the mater
even tighter and
its heats its core.



Will gravity
continue to pull
like this forever?



Noooo dude, at some ..
point the particles will
have enough energy to
start the nuclear fusion!

Nuclear fusion?
What's that?

Nuclear FUSION. It happens
when some particles in plasma
crash together and make a new
element. This reaction produces
a lot of energy!



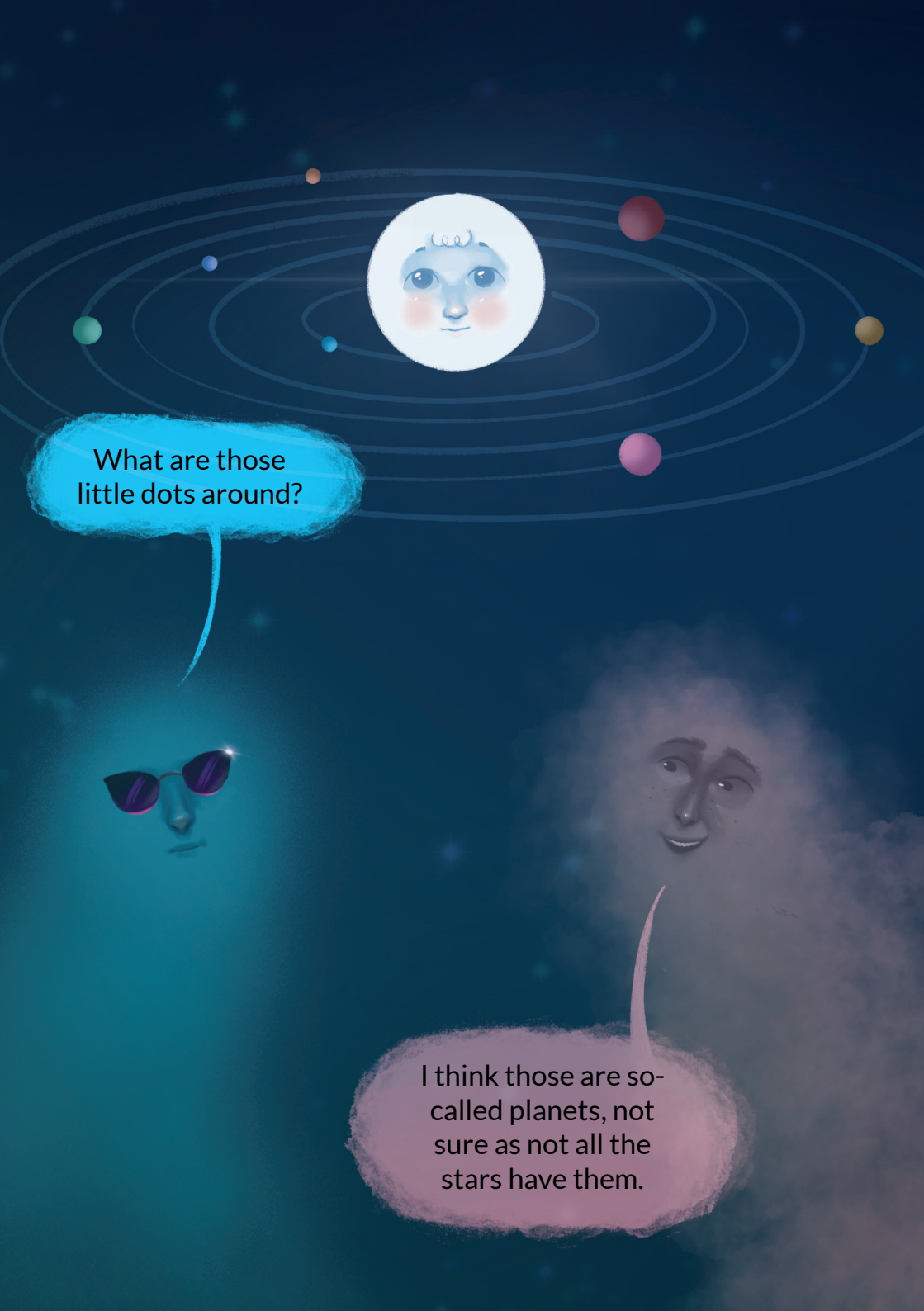
WHAAAT! WOW!
It's so pretty! Why
does it shine tho?



It's now a star, smaller and
warmer. Hot enough to
burn the hydrogen inside!
I've seen it a million times
but it's always delightful!



Finally, I'm feeling balanced.
Now my energy from nuclear
fusion prevents further squeezing.



What are those
little dots around?

I think those are so-
called planets, not
sure as not all the
stars have them.



You see!
Working
together
pays off!

Yeah, you
are right.
Let's make
more stars



A whimsical illustration of a galaxy with a face. The galaxy is depicted with a bright yellow core containing a smiling face with large, expressive eyes. From the core, vibrant purple and pink nebulae and star-forming regions radiate outwards, resembling a crown or a burst of energy. The background is a deep blue space filled with numerous small, distant stars of various colors (white, blue, pink).

Some million
years later ...

My Star Formation Rate is
extremely high. Oh, and I even
have a Galactic Wind because
of that! I am so bright now!



The End

The events depicted in this comic are fictitious.
They constitute only the scientific visualisation
of the probable events occurring in the Universe.

Starring



Galaxy

Various stars, gas and dust bound together by gravity. Many galaxies have a supermassive black hole in the centre. Galaxies can have spiral, elliptical or irregular shapes. It can have from a hundred million to a hundred trillion stars. Our Earth is part of a spiral galaxy called the Milky Way.



Gas

Matter made of atoms and small molecules. It was formed right after the Big Bang (the beginning of the Universe). It is a fundamental building material whose chemical composition evolves throughout the Universe's lifetime.



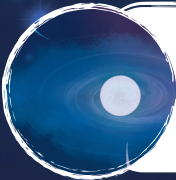
Dust

Matter made from different particles, created during supernova eruption or around old low-mass stars.



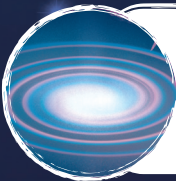
Molecular cloud

A cold mixture of gas and dust. It can collapse and produce stars.



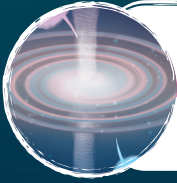
Protostar

Object right before star but with no nuclear reactions inside it.



Accretion disk

Diffuse matter orbiting around a massive central body (e.g., a star or a black hole).



Jets

Matter torn from the central object's magnetic poles during accretion. This process is necessary for star formation as it takes some energy from the system. Otherwise, the energy would impede further accretion.



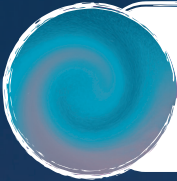
Star

The most common astronomical object created by the gravitational collapse of a molecular cloud. Extremely hot and takes its energy from nuclear fusion.



Nuclear fusion

Merging of two particles resulting in energy and a new single particle.



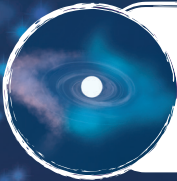
Plasma

One of four fundamental states of matter next to solid, liquid, and gas.



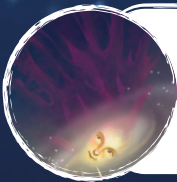
Planet

An object orbiting a star, in which stable nuclear fusion doesn't occur and is massive enough to clear its orbit from other smaller objects.



Star Formation Rate

Parameter that determines the speed of creating stars formed in the galaxy.



Galactic wind

Particles blown away by freshly formed massive stars inside starburst galaxies (galaxies which produce a lot of new stars).



Meet the team behind “A Star is Born”!

Karolina Dziadura is an astronomer and comic book author, Zosia Miedziejko is a talented graphic designer, and Krzysztof Lisiecki is an advisor astronomer. Together, they’re bringing the mysteries of the universe to life in a fun and accessible way.

Join them on their journey through the cosmos and learn about the wonders of astronomy in this exciting comic series! In this comic book, journey through the vastness of space and explore the fascinating process of star formation.

Follow the gas inflow that meets dust as they come together to create spectacular new stars inside galaxies. With beautiful illustrations and easy-to-follow explanations, this comic makes learning about astronomy fun and accessible for everyone.