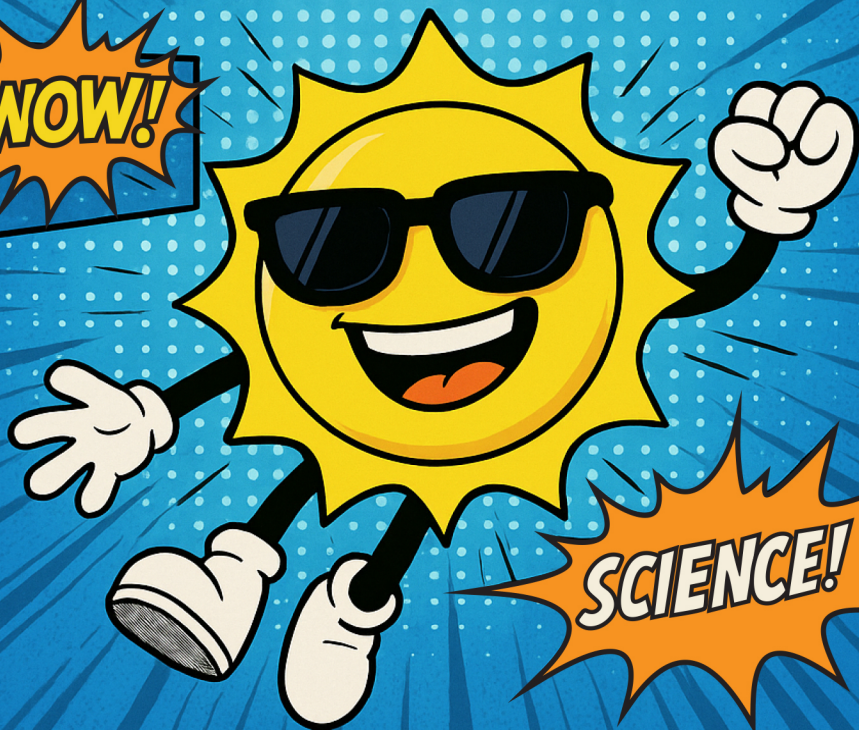


FUSION @ ORNL PRESENTS:

SUPER STAR!

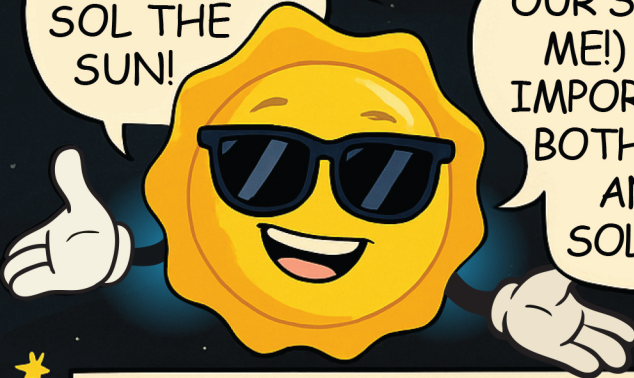
**A COSMIC COMIC FOR
JUNIOR SCIENTISTS**

WOW!



WRITTEN BY
RHEA BARNETT, LOUISE FERRIS,
YASHIKA GHAI & SEAN SIMONEAU

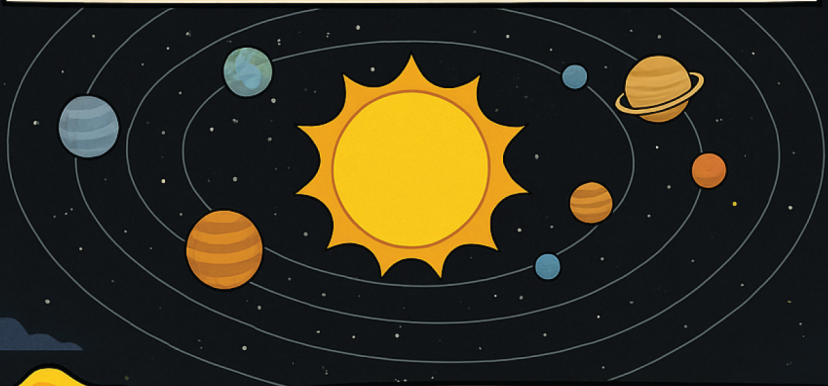
ISSUE
No.1



HI! I'M
SOL THE
SUN!

OUR SUN (THAT'S
ME!) PLAYS AN
IMPORTANT PART
BOTH FOR EARTH
AND OUR
SOLAR SYSTEM.

THE SUN KEEPS THE PLANETS IN OUR
SOLAR SYSTEM TIED TOGETHER, EACH
OF THEM TRAVELING IN A BIG LOOP
AROUND IT, CALLED AN ORBIT.



YOU MIGHT BE WONDERING,
"WHAT IS THE SUN, EXACTLY?"

THE SUN IS A STAR!

JUST LIKE ALL THOSE LIGHTS YOU SEE
TWINKLING IN THE NIGHT SKY!
STARS ARE BIG BALLS OF SUPER-HOT GAS
CALLED PLASMA... BUT WHAT IS A PLASMA??

A **PLASMA** IS A
STATE OF MATTER, JUST LIKE...



SOLIDS

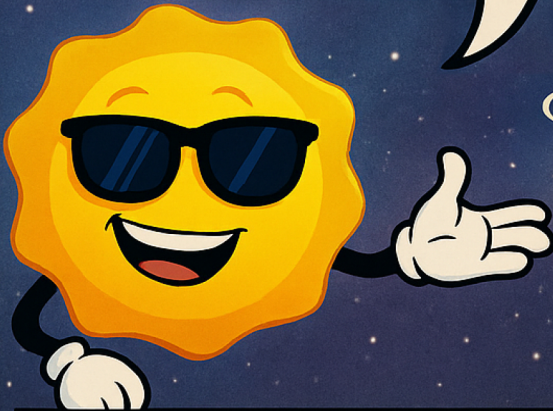


LIQUIDS



& GASES'

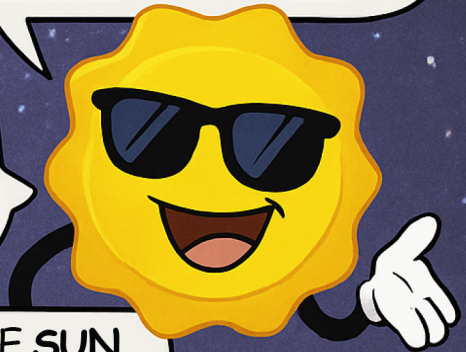
THINK OF IT LIKE A SOUP
MADE OF PARTICLES
THAT ARE VERY HOT
AND MOVING VERY FAST.



PLASMAS ACTUALLY MAKE UP
MOST OF OUR UNIVERSE —
MORE THAN 99% OF ALL MATTER
THAT EXISTS IS PLASMA!

PLASMAS NEED SPECIAL CONDITIONS TO EXIST, SO THEY AREN'T FOUND ON EARTH AS EASILY AS THE OTHER STATES.

BUT YOU CAN STILL SEE EXAMPLES OF **PLASMA** ALL AROUND, IF YOU KNOW WHERE TO LOOK!

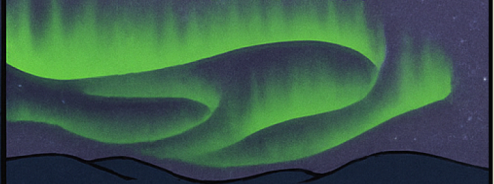


WE LEARNED THAT THE **SUN** AND **STARS** ARE MADE OF PLASMA, BUT ALSO...

LIGHTNING IS MADE OF PLASMA!



AURORAS, LIKE THE NORTHERN LIGHTS, ARE MADE OF PLASMA!



OPEN

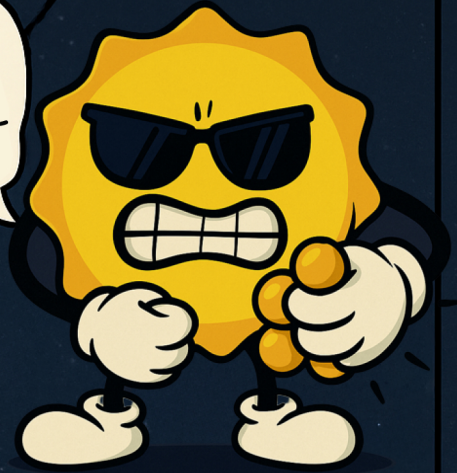
NEON SIGNS GLOW THANKS TO PLASMA!

EVEN SOME OF THE LIGHT BULBS IN YOUR HOUSE USE PLASMA TO LIGHT UP!

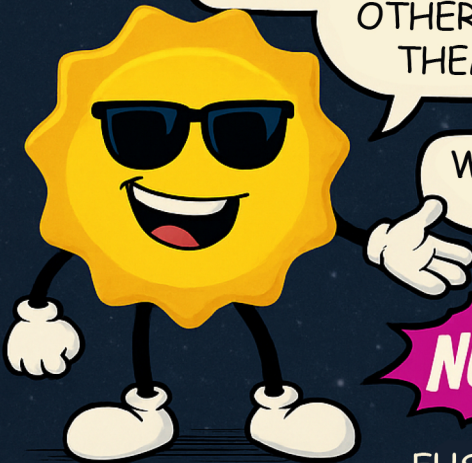


THE SUN SQUEEZES
A LOT OF STUFF
TOGETHER INTO A BALL
THANKS TO **GRAVITY**.

THIS MAKES
LOTS OF
HEAT &
PRESSURE.



IN FACT, THE SUN IS SO HOT AND SO
DENSE THAT ALL THE SMALL PARTICLES
IN IT ARE PUSHED INTO EACH
OTHER HARD ENOUGH FOR
THEM TO STICK TOGETHER!



WHEN THIS HAPPENS,
WE CALL IT...

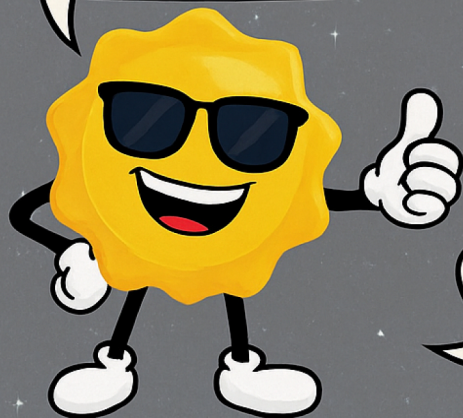
NUCLEAR FUSION!

FUSION IS HOW THE SUN IS
ABLE TO GIVE SO MUCH
ENERGY TO YOU DOWN
ON EARTH.

IT IS POSSIBLE TO MAKE FUSION
HAPPEN ON EARTH TOO, BUT WE'LL TALK
MORE ABOUT THAT IN A LITTLE BIT.

BUT WHAT DOES THE SUN DO?

THE SUN PROVIDES LIGHT, CREATES WEATHER,
AND KEEPS EARTH AT THE RIGHT TEMPERATURE
FOR ALL LIVING THINGS.

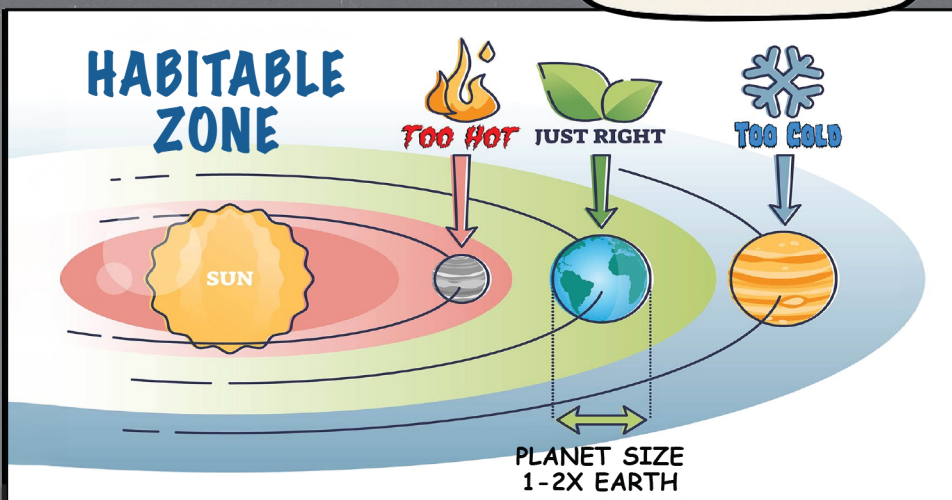


IF WE WERE
CLOSER TO THE SUN,
IT WOULD BE

TOO HOT!

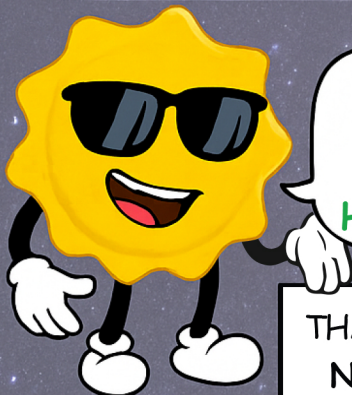
IF WE WERE FARTHER,
IT WOULD BE

TOO COLD!

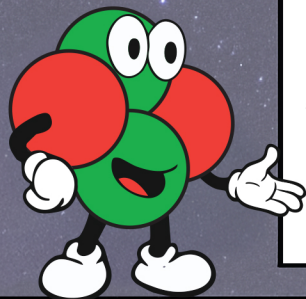
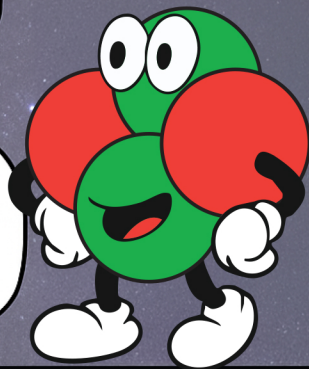


EARTH IS IN THE **HABITABLE ZONE**,
ALSO CALLED THE **GOLDILOCKS ZONE**
— LIKE THE FAIRY TALE!
WHERE EVERYTHING IS JUST RIGHT.

THE SUN HAS A LOT TO TEACH
US ABOUT SCIENCE TOO!



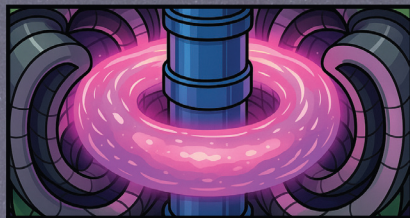
HEY, IT'S MY
FRIEND,
**ASH THE
HELIUM ATOM!**



THAT'S RIGHT! IN 1925, A SCIENTIST
NAMED CECILIA
PAYNE-GAPOSCHKIN
DISCOVERED THAT
THE SUN WAS MADE
OF HYDROGEN
AND HELIUM.



SINCE THEN, SCIENTISTS
ALL OVER THE WORLD HAVE
BEEN STUDYING HOW TO
MAKE ENERGY THROUGH
FUSION, JUST LIKE THE SUN.



FUSION ENERGY CAN PROVIDE
ABUNDANT ENERGY FOR
YEARS TO COME - THE FUTURE
IS FULL OF POSSIBILITIES!

THEY ARE BUILDING BIG
MACHINES CALLED
FUSION REACTORS
THAT USE A REALLY
HOT PLASMA TO CREATE
LOTS OF POWER!

TO LEARN MORE ABOUT FUSION ENERGY,
READ ON IN ISSUE 2 -

SUPER STAR: A STAR IN A JAR!

SOLAR SEARCH

E L R T K X S T A R S X Y Q Z W N N
M I T R E A C T I O N V C F Q O S U
A G X S A W D G E A R T H K Z Y C C
G H W L F U S I O N G A S O L I D L
N T K P I D R P A R T I C L E T M E
E N L W S Q S O L A R K R A S M S A
T I P I K A U T R P R E S S U R E R
K N U N B J E I U A E Q P Z N F M J
P G N D L L M I D S C H F G O R P K
L U Z H E A T B D E P L A S M A V R
W E A T H E R O J P A R T I C L E T
G L P L I G H T B U L B N I T S B U

FIND THE FOLLOWING WORDS IN THE PUZZLE.
WORDS ARE HIDDEN → ↓ AND ↘.



AURORA
EARTH
FUSION
GAS
HEAT
LIGHTBULB
LIGHTNING
LIQUID
MAGNET
NUCLEAR

PARTICLE
PLASMA
PRESSURE
REACTION
SOLAR
SOLID
STARS
SUN
WEATHER
WIND

WORD LIST:

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OAK RIDGE NATIONAL LABORATORY
FOR FUSION ENERGY WEEK 2025