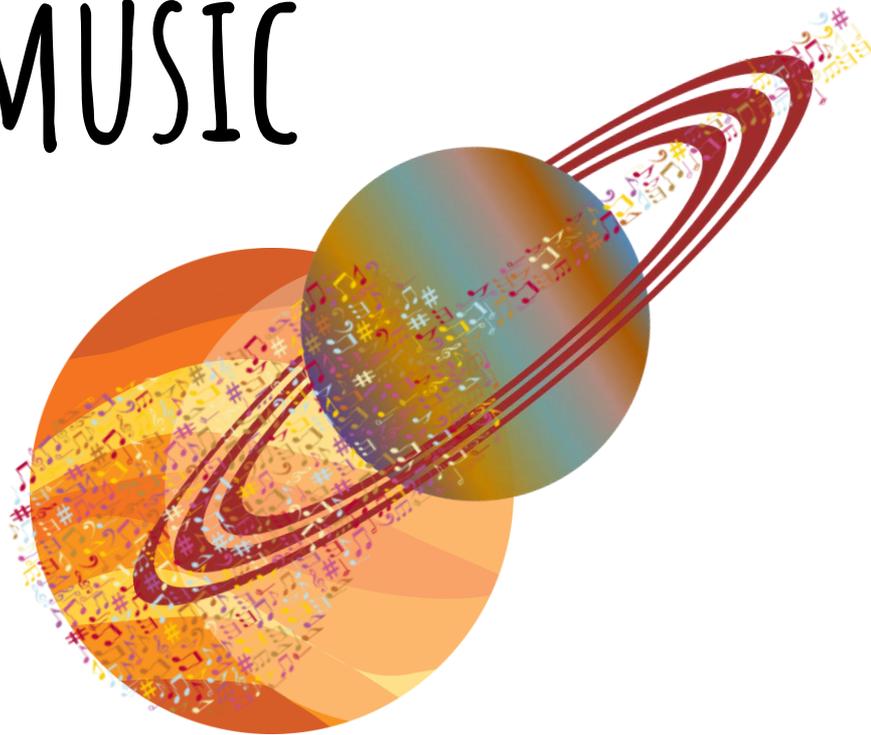


# COSMIC MUSIC





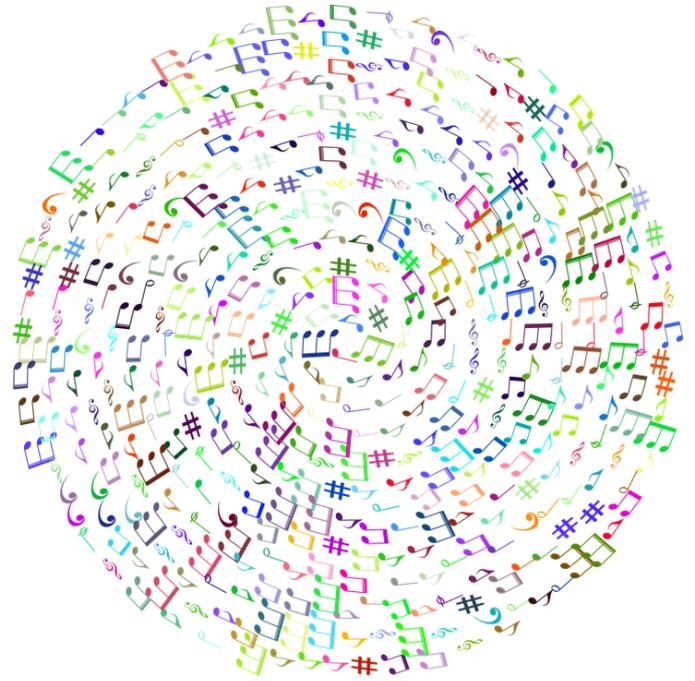
Watch Astronaut Chris Hadfield play *Space Oddity* by David Bowie on the International Space Station!

<https://www.youtube.com/watch?v=KaOC9danxNo>



MUSIC GIVES A SOUL TO THE UNIVERSE,  
WINGS TO THE MIND,  
FLIGHT TO THE IMAGINATION,  
AND LIFE TO EVERYTHING.

PLATO



*HOW WOULD YOU MAKE MUSIC IN YOUR SPACE HABITAT?*

# HOW IS MUSIC MADE?



Watch this video by the Toronto Symphony Orchestra to see how instruments vibrate to make different sounds!

<https://www.youtube.com/watch?v=2jSnnGC-HpI>



*WHAT DO YOU NOTICE ABOUT EACH INSTRUMENT?*

*THAT MOVEMENT IS CALLED VIBRATION.*

YOU ARE LIVING IN SPACE AND WANT TO MAKE MUSIC....

GATHER THESE MATERIALS: A SMALL PLASTIC TUB WITH A LID, 3 RUBBER BANDS, 5 FT OF TWINE OR CORD, 2 POPSICLE STICKS, 1 SHEET OF COPY PAPER, 1 METAL SPOON, 10 COINS OR BEANS.

*HOW MANY DIFFERENT INSTRUMENTS CAN YOU MAKE WITH THESE ITEMS?*

STRING INSTRUMENTS MAKE SOUND FROM VIBRATING STRINGS.



Check out this video of a rubber band guitar!

<https://www.youtube.com/watch?v=G06-xwm2rpg>

# WIND INSTRUMENTS MAKE MUSIC BY VIBRATING AIR.



[https://www.youtube.com/watch?v=\\_jF-4QRoQ7U](https://www.youtube.com/watch?v=_jF-4QRoQ7U)

# PERCUSSION INSTRUMENTS VIBRATE WHEN STRUCK.



Hands on Science: Spoon Gongs

From Tableware to Musical instruments, watch this cool video!

[https://www.youtube.com/watch?v=\\_BYvnlTQiqk](https://www.youtube.com/watch?v=_BYvnlTQiqk)

# WHAT CHALLENGES WOULD YOU HAVE MAKING MUSIC IN SPACE?

Astronaut Ellen Ochoa, a classical musician, brought her flute as one of her personal items on her first shuttle flight. She only got to play it once, though, as part of an educational video for school kids. On short shuttle flights, she explains, astronauts are so busy that they really don't have much time to play an instrument. "For a shuttle flight, it's probably more of a sentimental thing, a memento for people who have had music as a serious hobby."

"When I played the flute in space," says Ochoa, "I had my feet in foot loops." In microgravity, even the small force of the air blowing out of the flute would be enough to move Ochoa around the shuttle cabin. In fact, even with her feet hooked into the loops, she could feel that force pushing her back and forth "just a little bit" as she played.



USING WHAT YOU KNOW ABOUT HOW SOUND IS MADE, DESIGN YOUR OWN MUSICAL INSTRUMENT TO PLAY IN YOUR SPACE HABITAT!



NOW WRITE A SONG YOU COULD PLAY ON YOUR INSTRUMENT!  
YOU COULD WRITE LYRICS (WORDS) TO GO WITH A MELODY YOU  
ALREADY KNOW - LIKE "TWINKLE, TWINKLE, LITTLE STAR"



CREATE A PIECE OF ARTWORK THAT INCLUDES YOUR INSTRUMENT DESIGN AND A LINE OF YOUR LYRICS.

YOU COULD USE WATERCOLORS, MARKERS, CRAYONS, COLLAGE, PAINT OR A COMPUTER PROGRAM. SHARE IT WITH SOMEONE AND PLAY YOUR SONG!



SHARE ALL YOUR CREATIONS WITH US TO BE IN OUR DESIGN YOUR HABITAT GALLERY!