

## MAKERS --HOMOPOLAR MOTOR AND MAGNETS! GRADES 1 – 5 SEPT. 21 AND 28

We hope that you and your child have lots of fun with this project!! **Please keep in mind these safety notes when using the Super Magnets:**

- Neodymium magnets are extremely strong and MUST BE KEPT OUT OF REACH OF SMALL CHILDREN! Do not give them to any child who might put them in their mouth, they are dangerous if swallowed and must be surgically removed!
- This is a project for older children who can understand the precautions and I recommend ADULT SUPERVISION! For more about neodymium magnets safety and precautions see <http://www.cpsc.gov/PageFiles/112864/5221.pdf%C2%A0>.
- Neodymium magnets can interfere with electronic devices so please keep them away from phones!
- When the magnet and the battery are attached, the battery will begin to get warm to touch. If it becomes very hot, we recommend using a new battery.

What is a Homopolar Motor? Visit this website to read and watch what we made in class!

<http://babbledabbledo.com/steam-project-tiny-dancers-homopolar-motor/>

Materials needed for this project are:

- 16 gauge copper wire, available on [Amazon](#)
- 1/2" x 1/8" Neodymium Disc Magnets, found at Home Depot
- AA Battery
- 3 in 1 Combination Tool, available on [Amazon](#), or pliers/wire cutters
- Template (see <http://hcs.hickmanschools.org/magnetism.html>)
- Crepe Paper (optional for skirt)
- Hot Glue (optional)

We did not make the Tiny Dancer in the 1-2 group, but we did make this in class:

<https://www.youtube.com/watch?v=xbCN3EnYfWU> (Best Science Fair Project)

<https://www.youtube.com/watch?v=yUToL9WAK8I> (shows how to fiddle with the wire to make the motor work)

We also explored Magnets using this:

[https://docs.google.com/presentation/d/1f9PLMq4MRLZnS48hXkj8oieTw12firJ4TbQmw6lP-OQ/edit#slide=id.g8ed5b94da\\_030](https://docs.google.com/presentation/d/1f9PLMq4MRLZnS48hXkj8oieTw12firJ4TbQmw6lP-OQ/edit#slide=id.g8ed5b94da_030)

Troubleshooting:

- If your wire is not dancing try these helps:
- Is the wire only touching the top of the battery and the magnets?
- Does the polarity of the magnet need to be switched (flip the magnet over)
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We hope you have lots of fun with this project and look forward to hearing about your homopolar motor!!

**Remember, Makers never say never and don't give up!!**