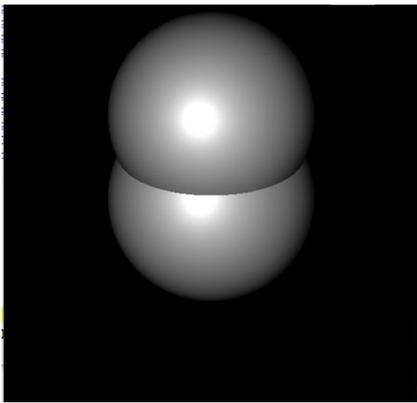


Tutorial: Steps to create metaballs in BRL CAD

1. BRL CAD contains two apps: MGED and Archer. First open up MGED. Once you open the app up, three windows will pop up.
2. Next you need to create a new database for your project. In the window titled Command window, type *opendb metaball*. (It will ask you if you want to create a new database. Just type *y*)
3. Open up the file by retyping it.
4. In the command window type *in* to create a new shape
5. Next you need to provide a solid name. You can call it whatever you want but I'll name mine *metaball*.
6. Then, you need to provide a solid type. Type *sph* because the metaball is a type of sphere
7. Finally, you will need to provide an x, y, and z vertex. You can type what you want but I'm typing 5 5 5
8. Lastly, you need to put in a radius which is 2.25
9. One of the balls will be in view. To get the other one, repeat steps 4, 5 (put a different name), 6 and 8. For 7, however you need to modify the z coordinate. This is to ensure that that the two balls will be attached like a metaball instead of being on top of each other.
10. Optional: To ray trace the metaball just type *rt* in the command window.
11. And... voila!!



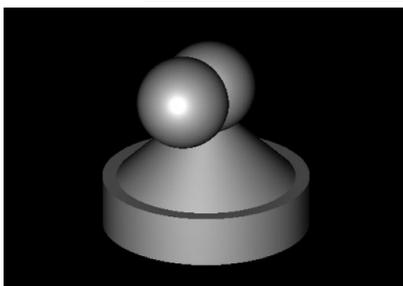
Steps to inspect the metaballs

1. Go to the command window
2. Type *l* then the name of your metaball (in this case, metaball) to get the location details of it.

```
mgd> l metaball
metaball: ellipsoid (ELL)
  V (5, 5, 5)
  A (2.25, 0, 0) mag=2.25
  B (0, 2.25, 0) mag=2.25
  C (0, 0, 2.25) mag=2.25
  A direction cosines=(0, 90, 90)
  A rotation angle=0, fallback angle=0
  B direction cosines=(90, 0, 90)
  B rotation angle=90, fallback angle=0
  C direction cosines=(90, 90, 0)
  C rotation angle=0, fallback angle=90
```

3. Ellipsoid, and the angles are the arguments of the metaball. I had used the default option for the rendering which is Isopotential rendering.

What I used this metaball is used for:



I used the metaball that was developed to make this chess piece. It is a pawn with head and a mask. I set one of the balls straight on the body, but I had the other one out like a mask.