

“THE SKY IN YOUR HANDS”

Short guide for the tactile material



The tactile element of the planetarium show "The sky in your hands" is a half sphere of 15 cm radius that represents the vault of heavens. This is a guide that will help you to build your own half-sphere using easy to find materials.

On top of the half-sphere we added the different elements that are explained about in the show's script. They represent either an astronomical object or a guiding feature that allows the visually impaired person to follow the storyline (figure 1).



(Fig. 1)

- **Represented features:**

The features shown in the half sphere are the following:

1. **Main stars:** These are stars of different sizes that are referred to in the script.
2. **Secondary stars:** These are stars that are part of the constellations but are not talked about in the script.
3. **Nebulae**
4. **Solid lines:** These lines are the drawings of the constellations.
5. **Dashed lines:** They are the path between constellations. They guide the user in her/his way from one constellation to the next ones, according to the order followed in the show's narration.

- **Materials we need:**

1. A ***half sphere or a spherical surface*** of 15 cm radius (the sizes of the objects described in this guide correspond to a half sphere of this radius)
2. **Main stars:** For the main stars we need balls of three different sizes (fig 2):
 - ***4 balls of 1cm*** diameter (Betelgeuse in Orion, Aldebaran in Taurus, Denebola and Regulus in Leo)
 - ***10 balls of 0.8 cm*** diameter (Bellatrix, Rigel, Almitak, Alnilan and Mintaka in Orion, Polar star in Ursa Minoris, Merak and Dubhe in Ursa Majoris, Castor and Pollux in Geminis)
 - ***2 balls of 0.4 cm*** diameter (Alcor and Mizar in Ursa Majoris)



(Fig. 2)

3. Secondary stars:

For the secondary stars we need:

- **42 split pins of 0.7 cm** diameter (fig 3)



(Fig. 3)

4. Nebulae:

To represent nebulae we need two pieces of soft fabric or material like wool, cotton, etc. (fig 4)



(Fig. 4)

5. Solid lines:

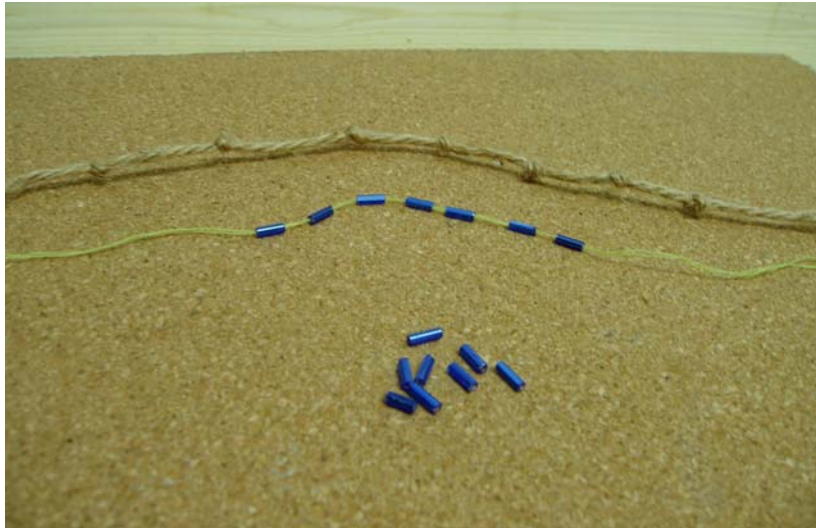
In order to "draw" the constellations we need thread of about, at least, 0.25 cm thickness and a bit rough. This quality is important because it will allow to distinguish it from the half-sphere material. We need to create contrasts. If we use a half sphere made with a soft material and, for solid lines, cotton thread (for example) it will be very difficult for a visually impaired person to distinguish clearly between these two elements and he or she won't understand which are the constellation outlines (fig 5).



(Fig. 5)

6. Dashed lines:

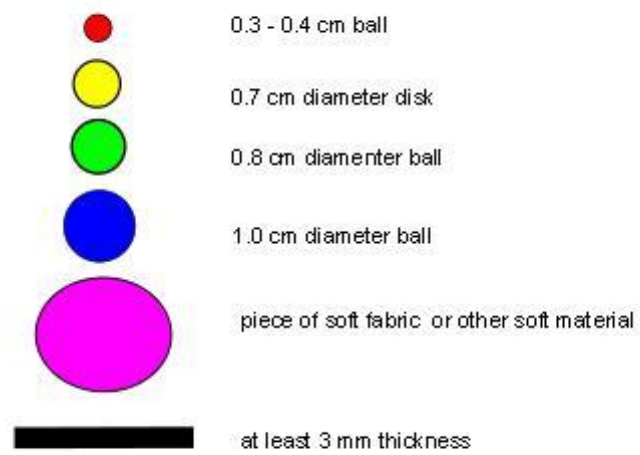
Dashed lines are paths that guide the user when going from one constellation to another. We can make them by putting together some kind of beads or with a thread with regularly spaced out knots, for example. (fig 6).



(Fig. 6)

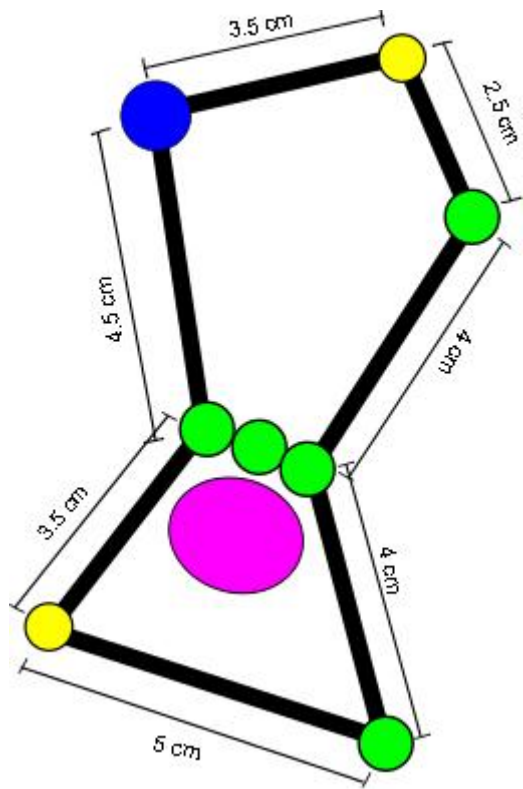
To make each constellation we put together their different constituent elements (figure 7) as we can see in the pictures. The constellation drawings (see further down in this document) can be used as templates by putting them on top of the surface, because their sizes correspond to a 15 cm radius half sphere. For other sizes you will have either to enlarge or shrink the drawings.

Constellations can be constructed directly on the half sphere. Depending on the materials we choose for the half sphere and the stars, nebulae, etc, we will glue, hook, hammer each element into it as shown (figures 8 to 12). Finally, we cut a square 2.5 cm long of any rough material, like soft sandpaper. We place this square between Orion and Taurus and it will be the starting point.

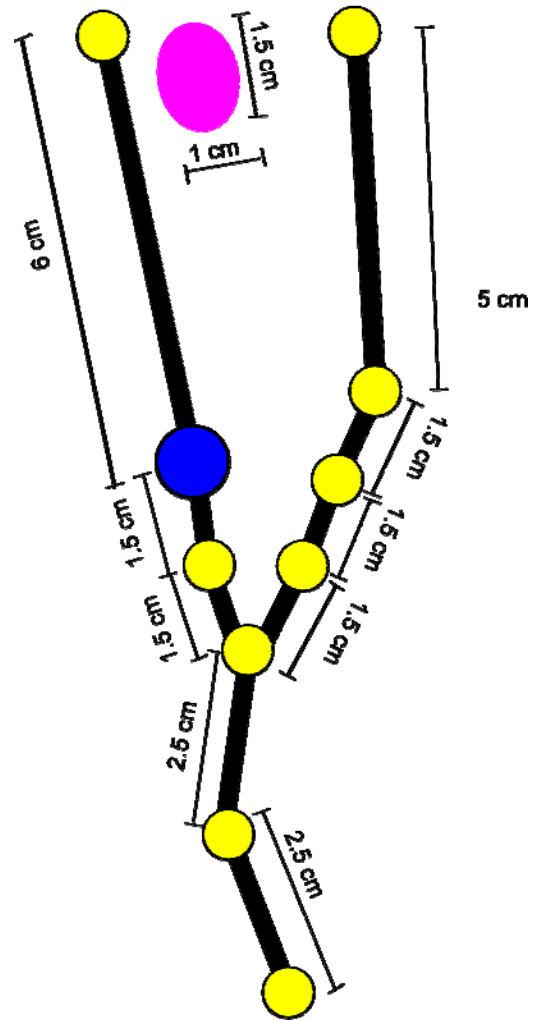


(fig 7)

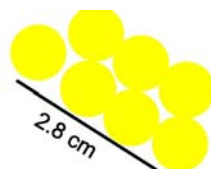
DRAWINGS



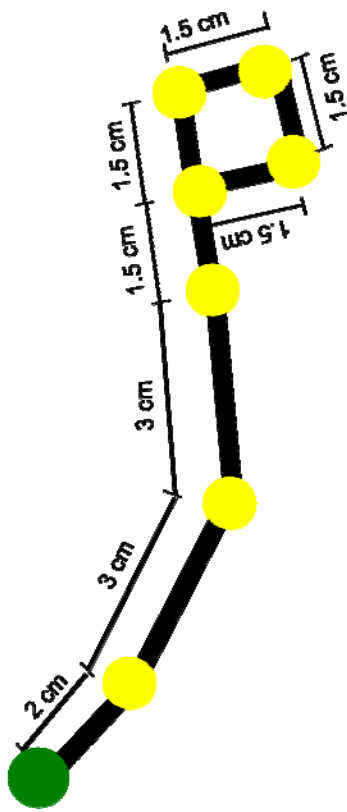
ORION



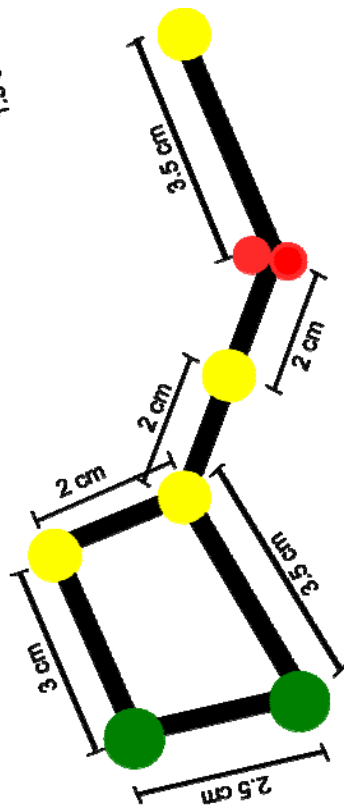
TAURUS



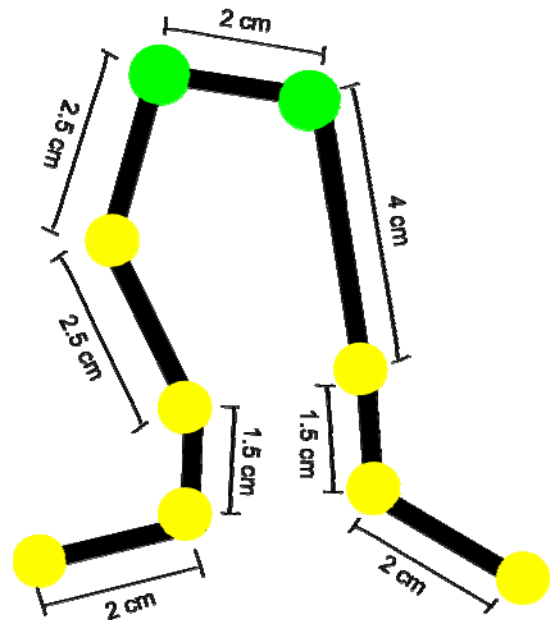
PLEIADES



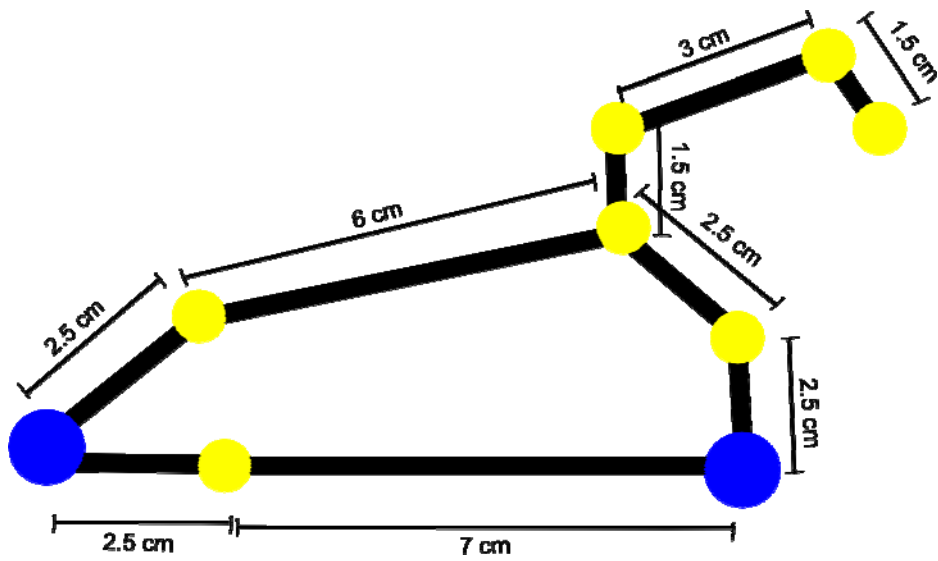
URSA MINORIS



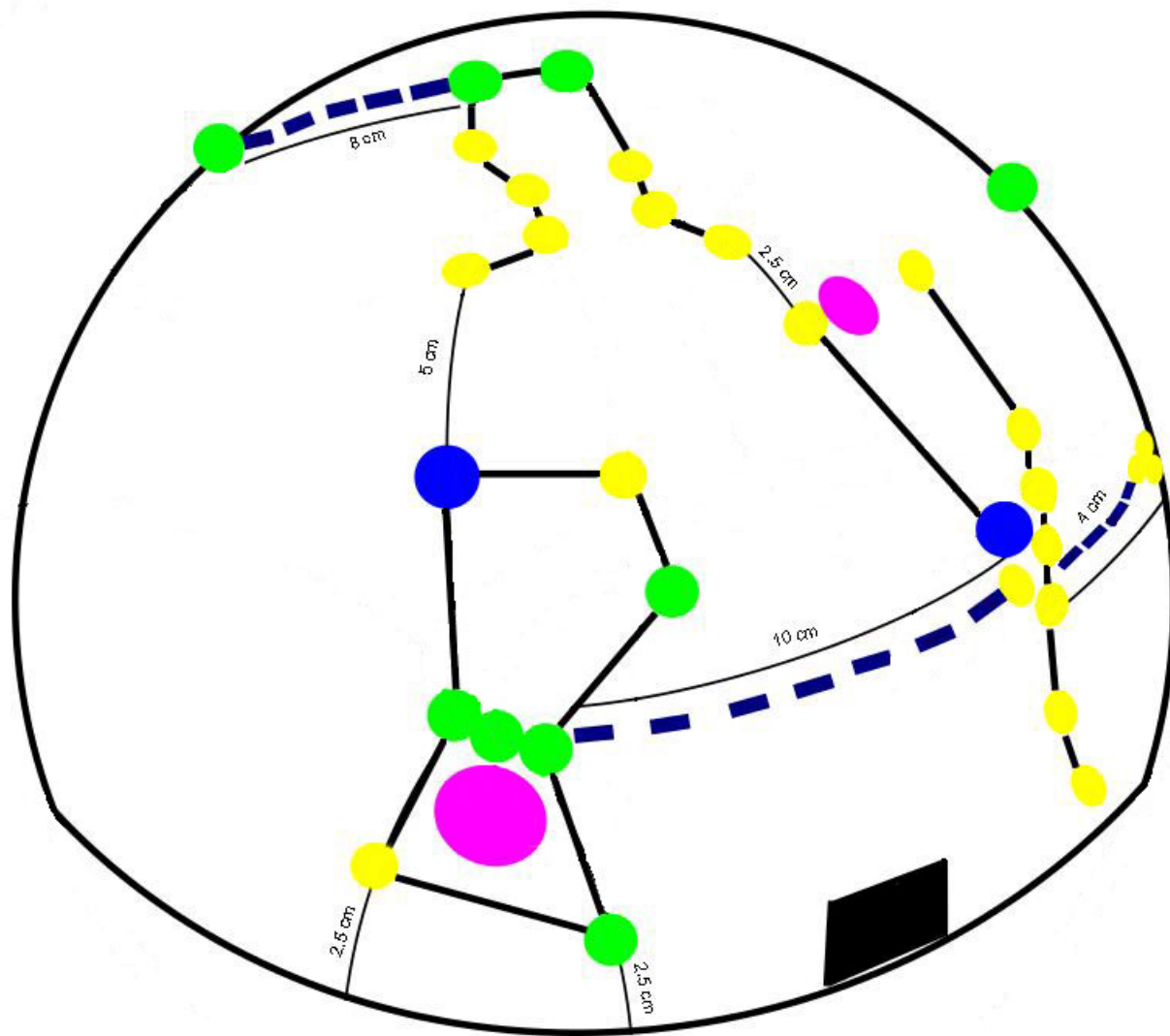
URSA MAJORIS



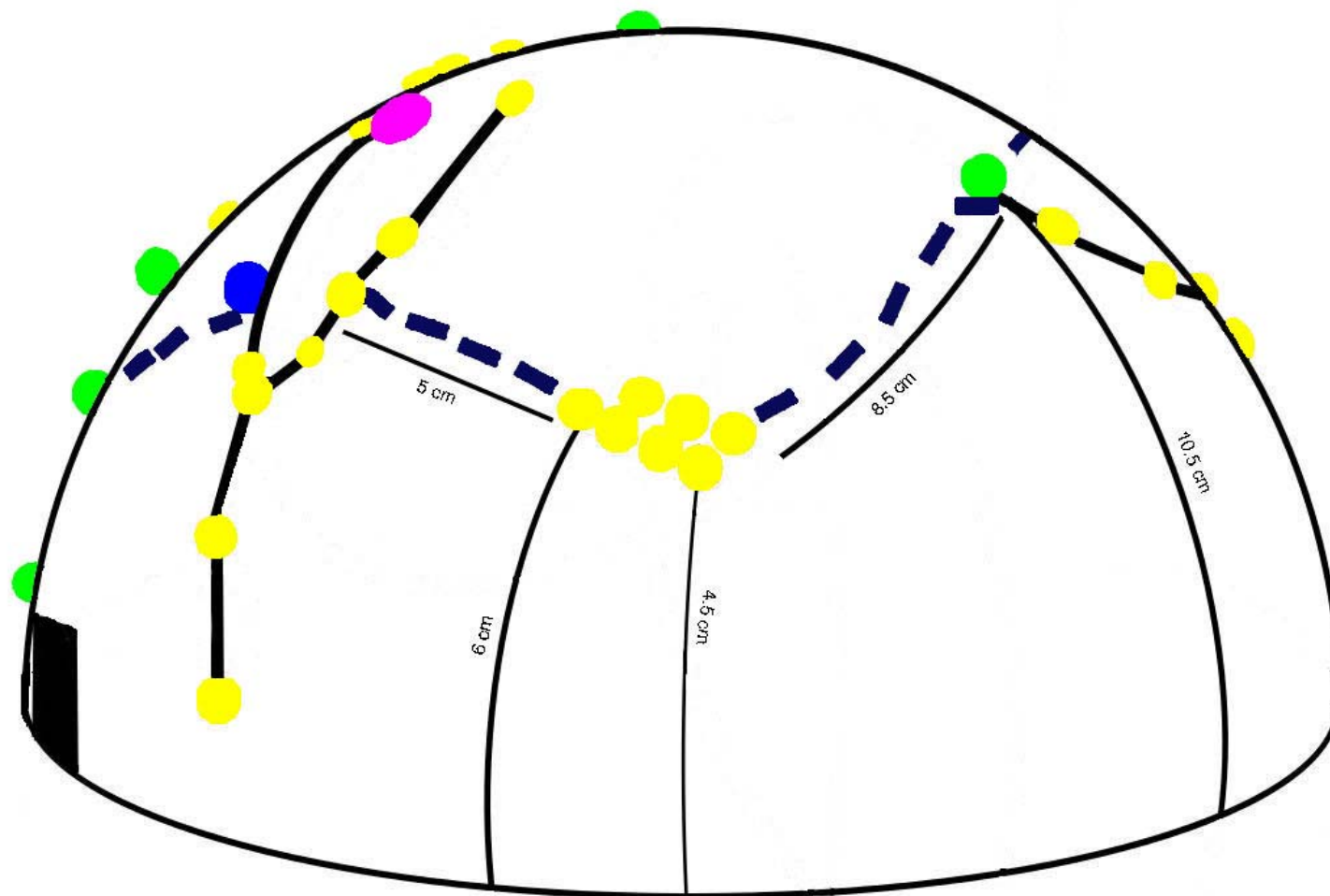
GEMINI

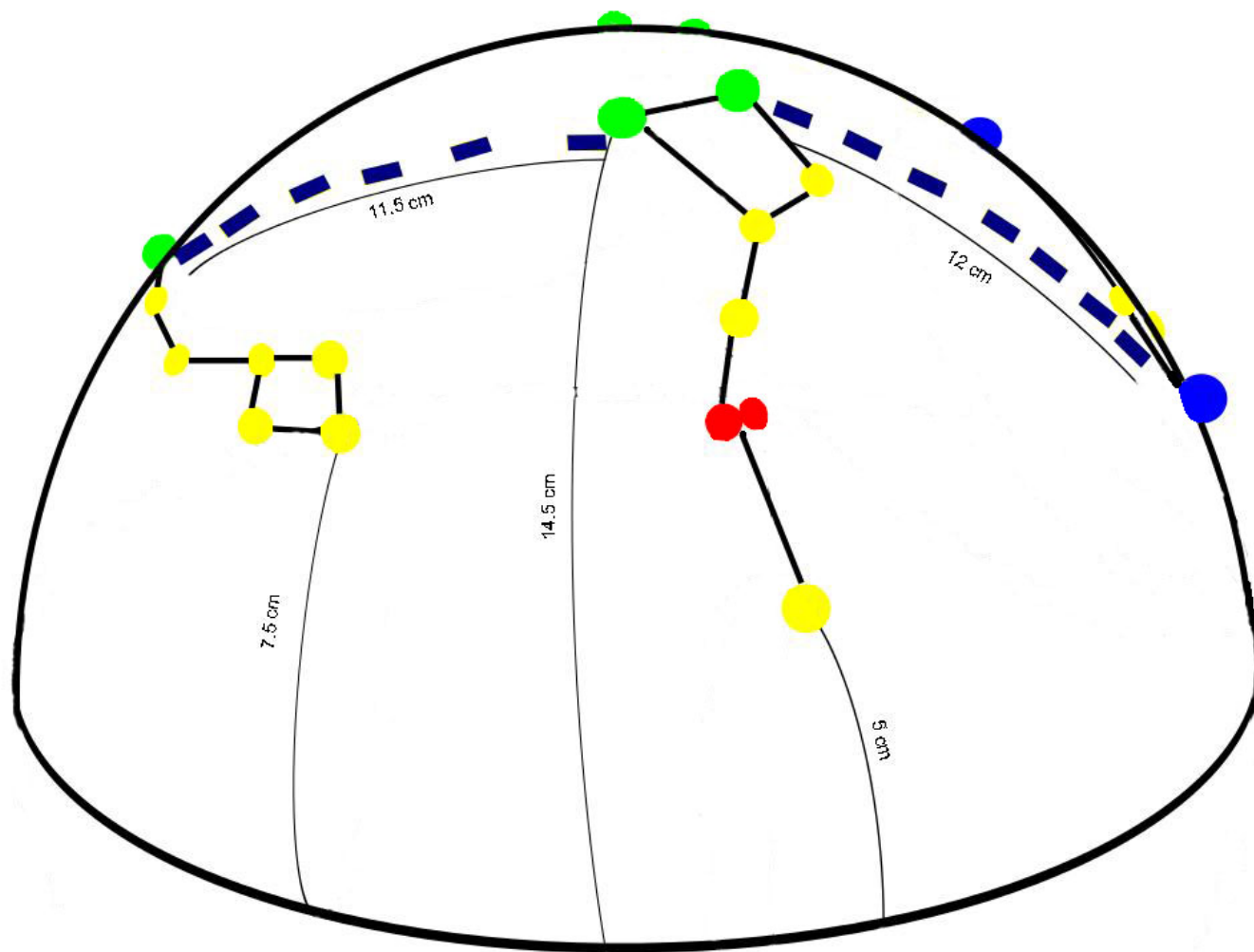


LEO

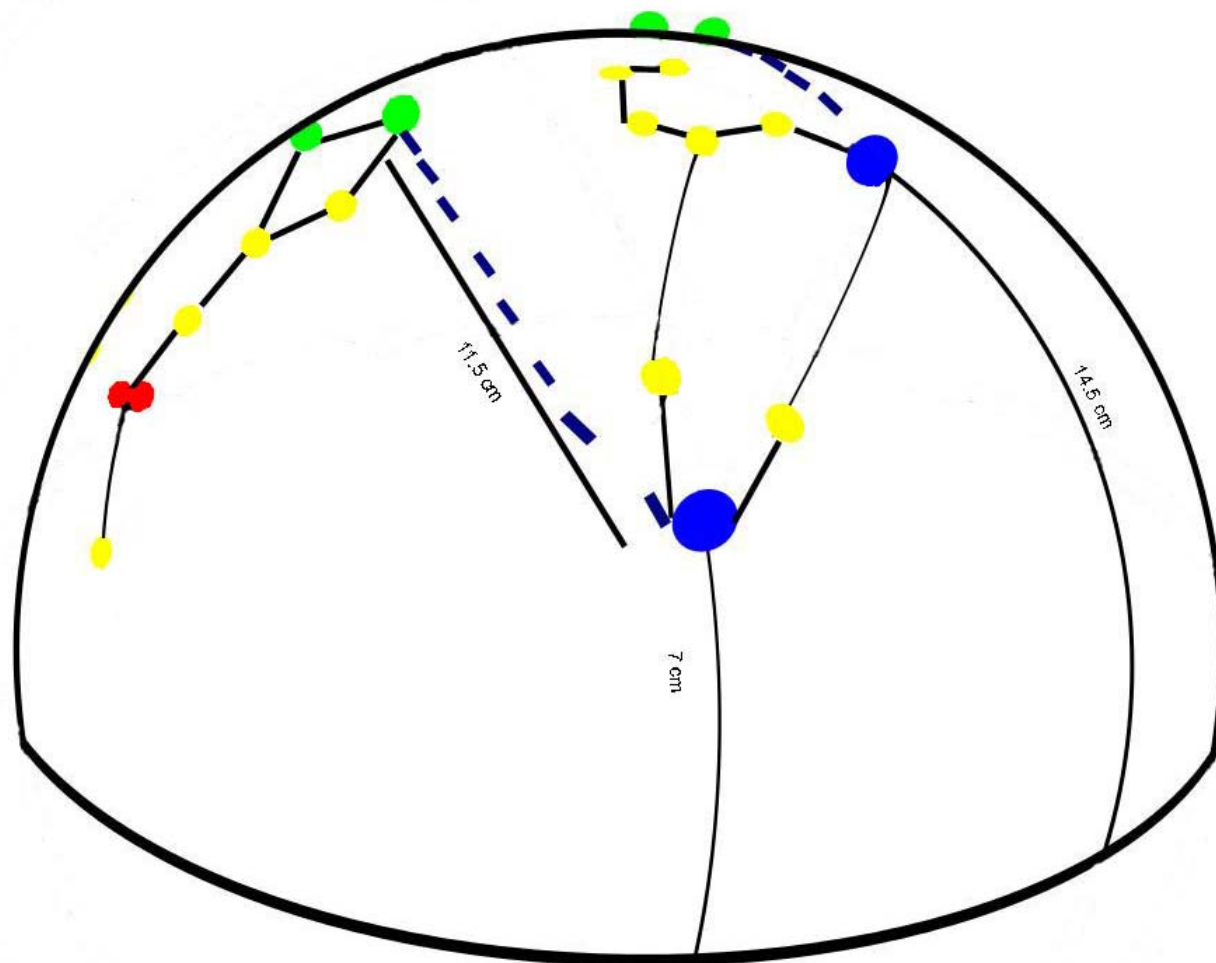


(fig 8)

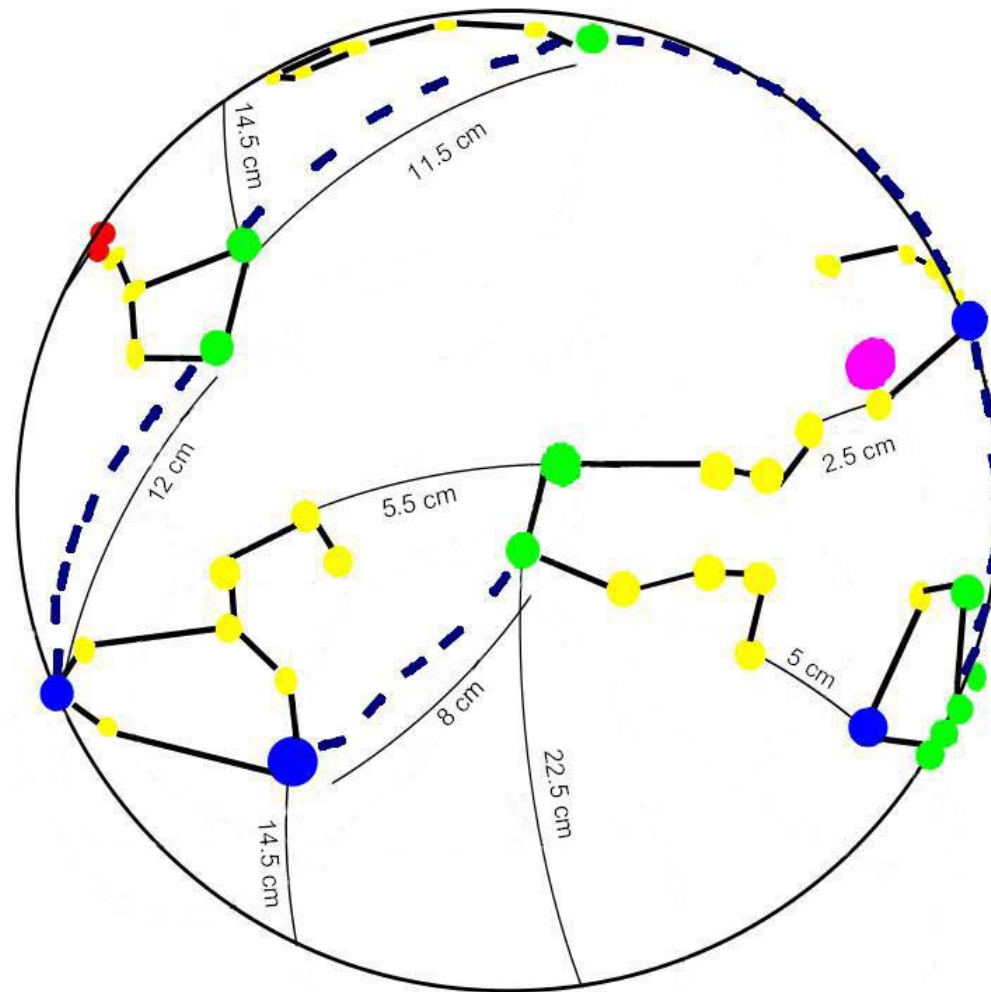




(fig 10)



(fig 11)



(fig 12)