3.0 Scale and size

3.1 Version control

Version 1.0 - 2 February 2021 - first version
Version 1.1 - 9 February 2021 - typos fixed

3.2 Introduction

How big is your DMO going to be and which planets have to be serviced.

3.3 Frame size

This is the first question: what part of the ceiling you want to use for the planetarium and how big is it?

The DMO on https://www.demoor-orrery.com/en is 2,20 x 2,20 meter and runs the first 6 planets.

How many square-space do you have available?

How are you going to mount it to the ceiling?

3.4 Orbit scale

Once you have determined what the surface is you can determine how many orbits (the circle in which the planet moves) you can depict on your DMO.

There are all kinds of calculation tools to be found on the internet. An easy to use example can be found at: https://thinkzone.wlonk.com/SS/SolarSystemModel.php

The measurements of the example DMO are depicted in the next table. The numbers are the rays from the Sun to the planet in Astronomical Units (real distance) and in centimeters (DMO distance). Conclusion: with a 2,20 x 2,20 DMO you can fit the first 6 planets from our solar system. If you have a bigger DMO you can fit more planets. The software serves all 9 planets, it is all a matter of physical space.

planet	distance to Sun in AU	distance to Sun in cm	remark
Mercury	0,39	4,26	
Venus	0,72	7,96	
Earth	1	11	
Mars	1,52	16,76	
Jupiter	5,2	57,23	
Saturn	9,57	105,27	
Uranus	19,3	212,33	not in this DMO
Neptunes	30,27	332,98	not in this DMO
Pluto	39,61	435,73	not in this DMO

Note: in real life the orbits are not concentric circles, have a look at Eise Eisinga's planetarium. But to reduce the complexity of this planetarium they are.

3.5 Two scales

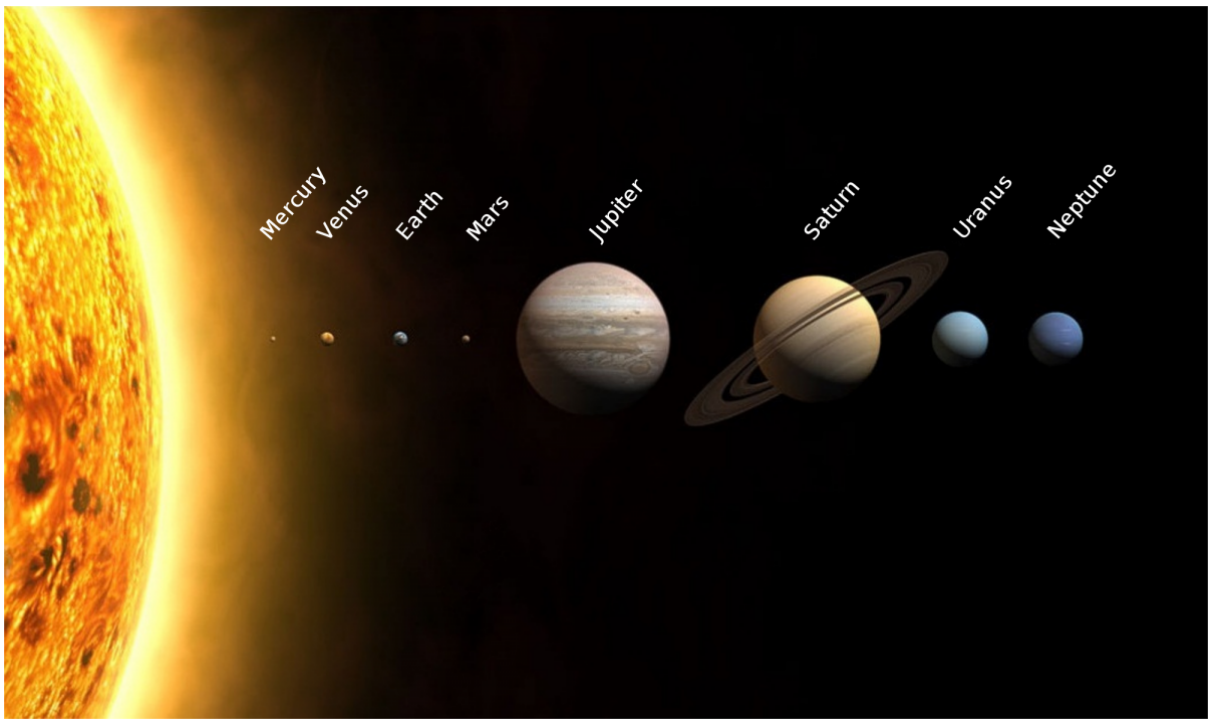
This is somewhat confusing. There are two scales in a DMO. The first scale is the distance between the planets, the other scale is the size of the planets.

If you want to size your planets in your DMO on the same scale as the distance you need an incredible big DMO. To have a thorough understanding of what I'm saying: please have a look at: https://vimeo.com/139407849. A beautiful made video from a group of friends who made a model in the desert. Gives you a good sense of how big our solar system is or how small we are on our own planet.

3.6 Planet scales

So use a different scale for the planets. Have a look at what looks good in the DMO. You can use https://thinkzone.wlonk.com/SS/SolarSystemModel.php for actual planet scaling as well.

Next to this all we have Jupiter and Saturn: they are rather big compared to the rest. I doesn't look that smooth two have 2 giant soccer balls in your carefully designed planetarium.



There is no mathematical solution for this. Just make them smaller. For your comfort: Eise Eisinga did it as wel in 1786.