

Planets on (low-cost) balloons

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Abstract

Planets are spherical objects (at least in first approximation) and their surfaces imaged and studied by space missions can easily be shown on a sphere. Data concerning our life on Earth and the history of human colonization can be easily visualized on a spherical surface. As well as everything that surrounds our planet in space, like orbits of artificial satellites, climate changes, phenomena related to our atmosphere, and threats that can come from outer space. Finally, even more theoretical topics such as mathematics and geometry can sometimes be easier, if seen on a sphere.

For this reason we have been working on new effective solutions to display planetary data and related information on spherical surfaces. Our main target in this work was to develop innovative tools that can: fascinate the general public about planets and stars, help us teach easily scientific topics related to planetary science, and finally be as low-cost and easy to move around as possible.

As a result of this work, we will be presenting for the first time the "Inflatable Planets" project, for which we are developing low-cost inflatable PVC balloons of different sizes, from 50cm to 5m of diameter, printed with detailed planetary surfaces. These inflatable planets have already effectively been used in a number of outreach exhibits and educational projects, where they weren't only useful to show the real aspect of planets and stars but also to explain and teach distances and scales of our solar system and space.

We will also present the state of the art of "Planets in a room", another project based on spherical projection, that uses a spherical plastic lamp globe and 3d printing techniques to keep costs as low as possible. This DIY kit to build a small planet simulator and planetarium projector for teachers, museum, planetary scientists and other individuals,

was developed in 2017 [1] and is actually being distributed to schools and other education institutions from all over Europe. We will also be presenting its possible use (under development) inside a spherical dome, for an innovative in-and-out form of Planetarium.

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References

[1] Giacomini L., Aloisi F., De Angelis I., "Planets in a room", EPSC Abstracts Vol. 11, EPSC2017-280, 2017