

# Granpa & Zoe

Mission: Light



3D é motion

RSACOSMOS



MEDIASTRO  
PROMOTION



centre national  
du cinéma et de  
l'image animée

# Synopsis

GranPa and his young accomplice Zoe lead a peaceful life in their ranch, up until the day when their tranquil existence is disturbed by a strange event: the light of the Sun grows dimmer, as if it is disappearing. No time to waste, our two heroes rush off on a race against time to save the sunlight.





# Let's meet the characters



**GranPa**

As a retired scientist, GranPa spends his time fishing, guzzling eucalyptus sticks, and discussing the mysteries of the universe for hours on end. Yes, he is passionately interested in astronomy – so what could be better for talking about light? But he is also both impulsive and absentminded. And those are two characteristics that don't really mix well, as you can imagine. His passionate outbursts often get him in trouble. But he always uses his deadpan humour to get out of it. GranPa says that he just wants to take things easy on his ranch, yet as soon as destiny beckons him along the road to adventure, he is still really keen. Which just proves that he doesn't find retirement as great as that...



**Zoe**

Without Zoe, GranPa's retirement would no doubt be really boring. This little 10 year old dingo regularly comes visiting his ranch. If the two of them hang out so much together, it's because they both share the same love of science. Zoe is one curious girl. She is eager to understand things, and GranPa has the answers she needs. However, please don't mistake her youthful energy for naivety or recklessness. On the contrary. In dangerous situations, Zoe is more prudent than GranPa. Difficult to know which one is really the kid. Zoe is also really good at knowing how to use what GranPa has taught her. Whenever GranPa's chronic absentmindedness puts the pair in danger, Zoe's quick reflexes save the day.



**Bogbog**

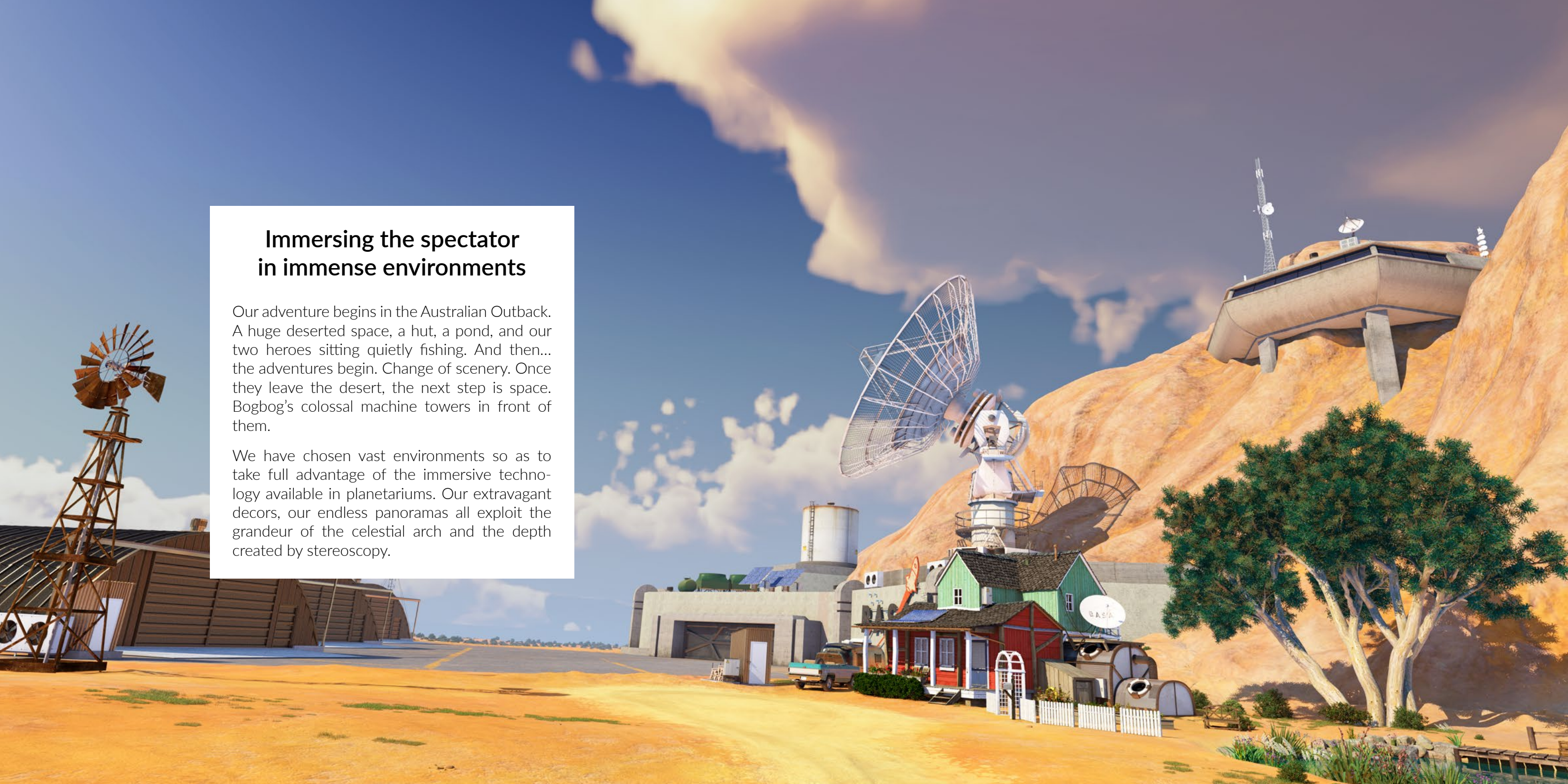
This is Bogbog. He's a teenage alien who hasn't found anything better to do than attack our planet. He's a long-time enemy of GranPa, and we can imagine them fighting, their historic struggles, their endless thirst for vengeance, a long list of upset plans. These two guys will never ever be friends. Maybe it's a generation thing, because Bogbog is right bang smack in the middle of his teenage rebellion. He spends all his time playing video games and talking back to his parents (who are too soft with him, I have to say). All this makes Bogbog a really rotten character, with zero compassion for any living species. He carries out his attacks from his bedroom, with his keyboard. But there is nothing sinister about Bogbog ; he's not clever enough for that, he just wants to get on with his "game".



## Immersing the spectator in immense environments

Our adventure begins in the Australian Outback. A huge deserted space, a hut, a pond, and our two heroes sitting quietly fishing. And then... the adventures begin. Change of scenery. Once they leave the desert, the next step is space. Bogbog's colossal machine towers in front of them.

We have chosen vast environments so as to take full advantage of the immersive technology available in planetariums. Our extravagant decors, our endless panoramas all exploit the grandeur of the celestial arch and the depth created by stereoscopy.







## Light, action!

Light is a really surprising subject for the person who discovers it, especially since it encompasses so many different fields and lies at the intersection of very different concepts. Heat, waves, color, and speed: they are all connected.

These are the observations we wish to share with the audience; we want them to leave having learned a few elementary notions.

The film shows various simple and verifiable considerations every minute: light is an energy which warms us and allows us to see, it is blocked by opaque objects; nonetheless we can't stop it.

Of course, in order to get audiences really involved with science, you invite them to take part in an adventure. This is why every scientific interlude in the film becomes part of a quest. Every time a scientific principle is mentioned, it is incorporated into the story. Light is both the object of the characters' quest, since they are trying to save it, and also the means to success, since they have to understand it in order to advance.



# Our teaching approach

We cannot observe the planets without light, nor can we understand them without the information that light embodies. Light is the primary resource of astronomers. This is something that people often do not know, or else they do not really appreciate how important it is. So, even though light is a determining element in the study of the cosmos, in planetariums it rarely has the starring role in teaching films.

Our film is aimed at children aged from 7 to 12. The nature of light, a subject they only study at High School, has therefore been adapted to make it easy for them to understand. We have selected basic essential notions, and used them to create our story. The film will provide a complete definition.

## Light is energy...

Light illuminates and heats us. It therefore acts in two ways: it is not only a visual phenomenon, but hides a more complex aspect which it is important to understand. Light is in fact an electric and magnetic field, an energy which interacts with matter.

## ... and is made up of all the colours of the rainbow

If we decompose the Sun's white light, we can see that it is made up of several colors: all the colors of the rainbow in fact. There is a close link between colors and light. They interact with matter and our own eyes. The color of the sky is created by the diffusion of the blue field of light in the atmosphere. The colors that we can see are in fact nothing but our own interpretation of light.

## ... which is powerful to a greater or lesser degree

This energy behaves like a wave, which, depending on its length, can appear in the form of light. Over and above certain wave-lengths, the wave no longer gives light, it is invisible, but still has an impact on us: in this case it is called infra-red, radio waves, micro-waves, or else ultraviolet or X rays.

## ... which obeys geometric laws

It changes direction when it goes across water, is reflected on surfaces, bounces off mirrors. But even if light is immaterial, it can still be manipulated. We learned how to use it, even before we understood its very nature.

## ... and which has a speed.

300000 km/second, that is the speed of light in a vacuum. This number is difficult for children to appreciate. In order for them to understand what this means, we have correlated another, smaller, figure: the 8 minutes that it takes light to travel from the Sun to Earth.







# What would a journey in space be like without a beautiful celestial arch?

## This is our sky based on the Gaia catalogue!

Our two heroes take off from Earth. Ahead an infinite starry sky opens out, which we have entirely reproduced using the ESA Gaia Catalogue.

Its latest version, data release 3, uses the coordinates of 1.8 billion stars which we have used to transform them into image form.

The result: a sky which is absolutely faithful to reality. Each point owes its position and its luminosity to the Gaia data. The Milky Way is recreated under our very eyes, with its billions of stars.

To reach a quality and a precision which honor the catalogue, we used HDRi: a larger dynamic range, in order to faithfully reproduce the subtleties of the differences in light between each heavenly body. In this way we obtain a more delicate nuance and a higher level of adjustment which allows us to generate our image in 2k, 4k and 8k definition.





# A 3D emotion creation, producers of *Polaris* and *Lucia*

Created in September 2001 by Vincent Arrouy and Stéphane Bertrand, the 3D emotion studio began creating shows for planetariums in 2005 with *The Race to Earth*. Since that date six other films have been made, including *Polaris* and *Lucia*, both international successes.

With *GranPa & Zoe*, the studio has signed a creation for which it is both director and co-producer.

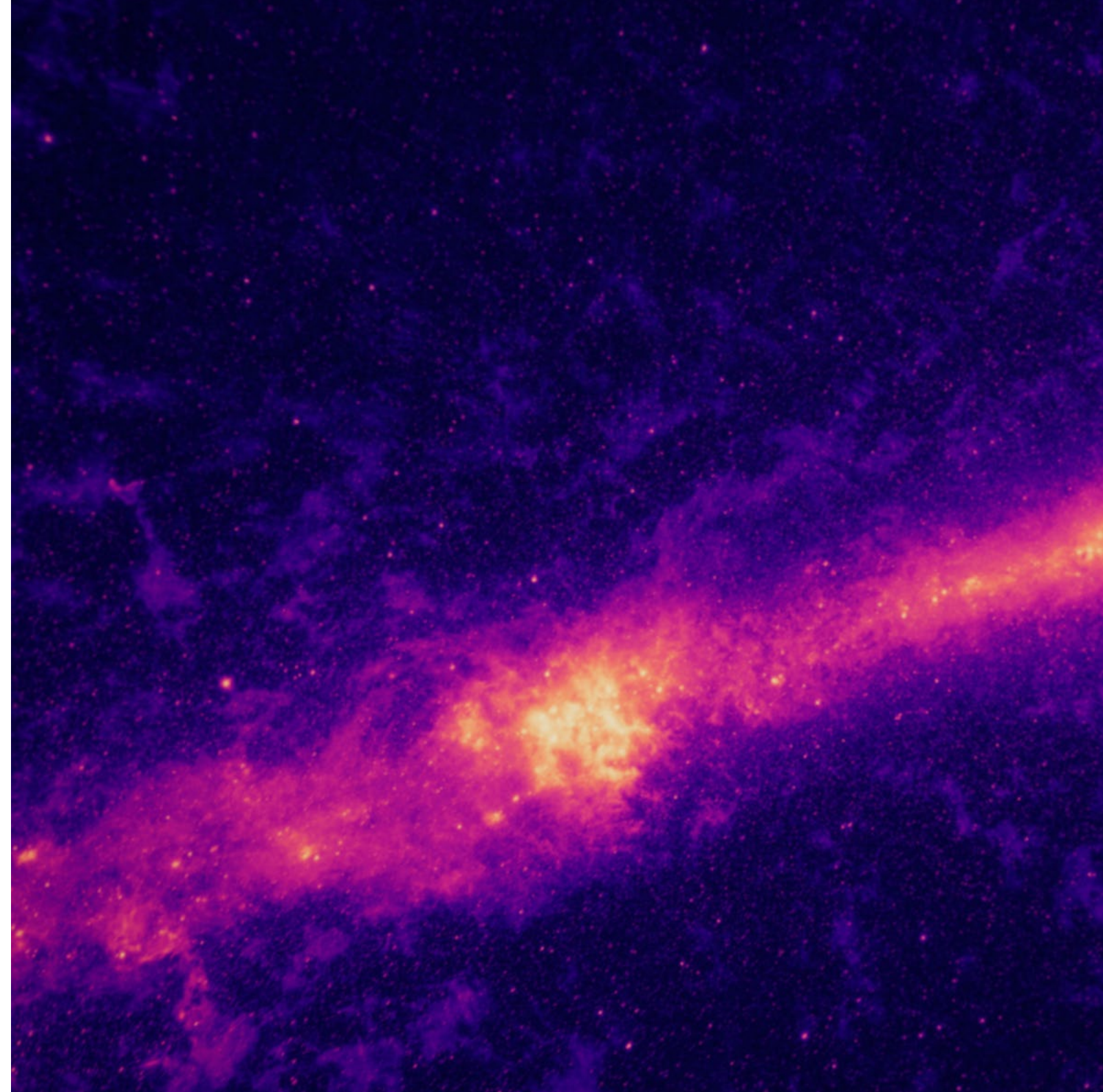
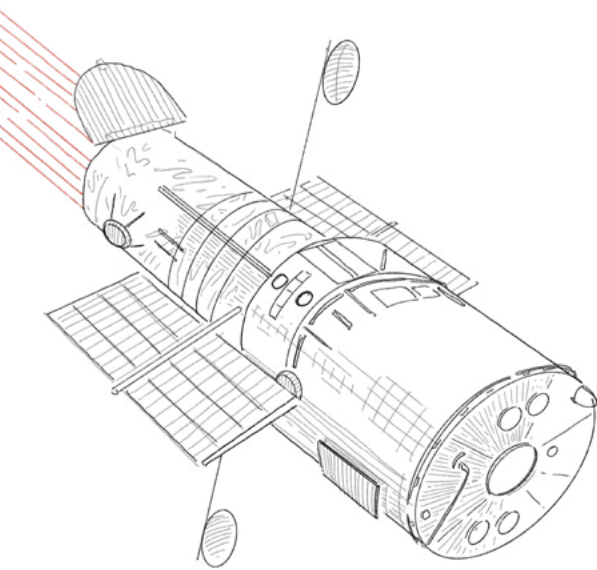


## Production

Médiastro Promotion is an association which uses shows to help a broad audience discover scientific knowledge in astronomy. With *Polaris* and *Lucia*, and now *GranPa & Zoe*, Médiastro Promotion aims to provide planetariums with high quality full dome shows, where science is backed up by action – for the greater pleasure of audiences of every age.

## Scenario

Astrid Dumontet took some time out from the world of books to write the scenario of *GranPa & Zoe*. Author of children's books for Milan, she has written several issues of the *My little questions* collection, which explains science, civilization and History subjects to children.





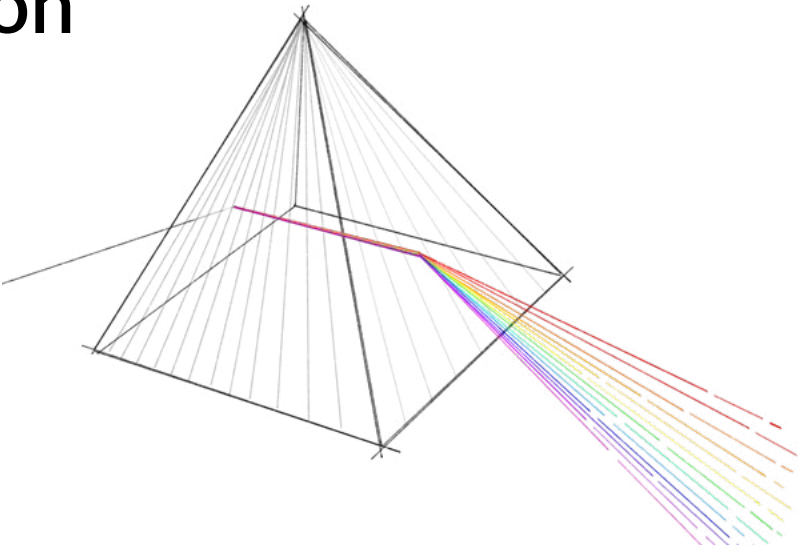
# Music

The music for *GranPa & Zoe* was composed by Gaël Romeuf, a multi-instrumentalist, with a French diploma in Contemporary Music, and Professor of the French Conservatoire de Musique. Gaël has worked in many training programs, and composed the music for *Lucia*. To accompany this latest adventure, he chose to mix electronic music and organic instruments like the hang, which results in a very singular sound track.

# Scientific validation

Stéphanie Escoffier, Director of Research with the CNRS at the Marseilles Centre of Particule Physics, and member of the SDSS project, played the role of scientific advisor, casting her educated eye on our project, helping with the scenario and different content to accompany film communication.

In addition, *GranPa & Zoe* has received the cooperation of the French Physics Society.



# With the help of the CNC

We would like to thank the CNC: our production was sponsored by an NTP grant (New Technologies in Production) which encourages productions using innovative relief techniques and digital technologies.

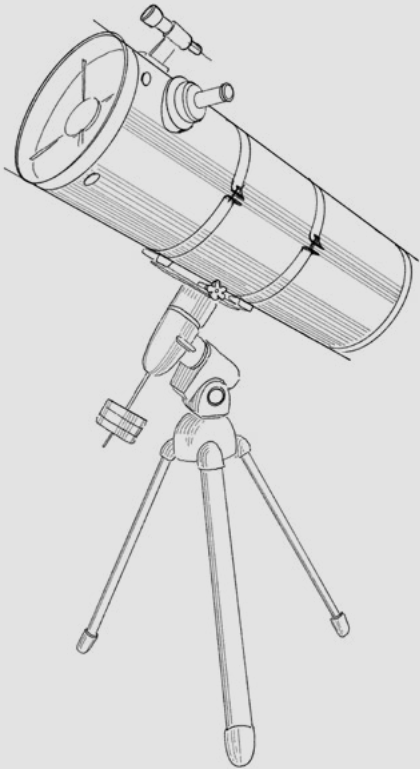


# Experiments to do after the session

Here is the research log! With six concepts to remind the children about light, three of which can be discovered via practical experiments.

The log is first and foremost a resource that the children’s teacher/ guide can use during their session.

It provides the opportunity to recall what has just been said, to underline the ideas that need to be better understood. It is also a way of making the subject of light more accessible, by defining it in terms of simple practices. It’s not necessary to be a physicist to play around with light.





# Technical data

## Length

27 min (30 fps)

## Formats

Fisheye 4k  
Fisheye 8k  
Fisheye 4k relief  
Fisheye 8k relief

## Target audience

7-12 years old

## Languages

English and French versions

## Exclusive distribution

RSA Cosmos

With the help of the CNC.

With the help of the French Physics Society.

This film used data from the Gaia mission of the European Space Agency (ESA) (<https://www.cosmos.esa.int/gaia>), procesed by the Gaia Data Processing and Analysis Consortium (DPAC, <https://www.cosmos.esa.int/web/gaia/dpac/consortium>). DPAC financing was organized by national bodies, notably those participating in the multilateral Gaia agreement.

This publication makes use of data products from the Wide-field Infrared Survey Explorer, which is a joint project of the University of California, Los Angeles, and the Jet Propulsion Laboratory/California Institute of Technology, funded by the National Aeronautics and Space Administration.

## A show in 3D and in 8k!

This is the first time a show of this kind is on offer to planetariums. It was a new challenge for us, and we are proud to have stepped up to meet it. We offer our film in a final 8k stereoscopic version.

### The choice:

Of very high definition for a transcendant space adventure for our two heroes.

Of relief to give depth and immersivity to the production.



## Contact

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