

EUROPHOTOMATH 2022, 1º Premio_

Light Cycloid

ES Bergen

My photo is a long exposure that shows how a wheel rolls. If you were to choose one point on the wheel – I did this with a light – and roll the wheel across the ground, that point would “draw” arches called cycloids in the air.

This is because of the forward motion. If the wheel was spinning on the spot, the one chosen point would “draw” circles, however because the wheel is moving forwards, the wheel makes a cycloid.

This mathematical concept can be shown using these equations: $x = r(\omega t + \sin \omega t)$ and $y = r(1 + \cos \omega t)$.

I think the contrasting colours and interesting background make this picture aesthetically pleasing while conveying a mathematical concept.



EUROPHOTOMATH 2022, 2^o Premio_

Double Rainbow

ES Karlsruhe

I captured this beautiful phenomenon at dusk from my balcony. This perfectly visible double rainbow is one of the amazing displays of mathematics in nature. The primary rainbow is at an angle of 42° while the secondary rainbow at an angle of 51° together forming concentric semicircles. The two arches are due to double refraction of light from the sun through circular rain drops. A rainbow is actually a full circle, being on land one can only see the hemispherical arch as the remaining semicircle is blocked by the ground and horizon. If I could see this same rainbow from the pilot's seat of an airborne plane, I would see it as a perfect circle!

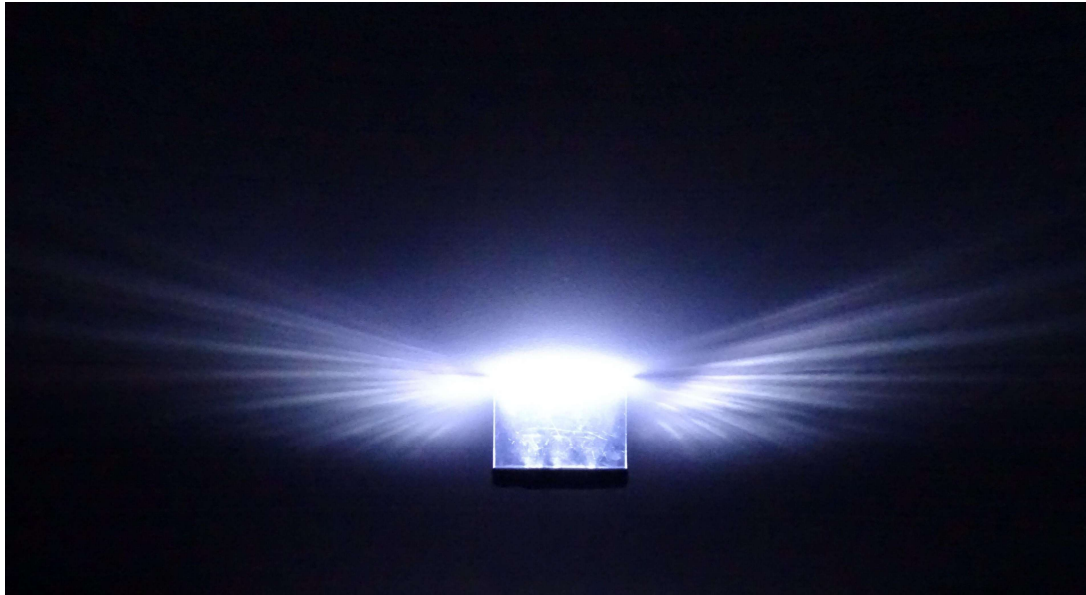
EUROPHOTOMATH 2022, 3^o Premio_

$x^2 + y^2 = \text{Moon}$

ES Varese

This though a telephoto lens captured moon and its reflection in the sea is a nearly perfect circle and reminds of the circle function.





EUROPHOTOMATH 2022, 4º Premio_

The Messenger of God

EE Bergen

This picture was taken at night. The light forms the shape of wings of an angel, perfectly symmetrical and beautiful. You might be wondering what this is. The answer to this not as exciting as the picture itself. It is a book reading light held against the wall. As I turned the light it was formed into something looking like feathers. It reminded me of an angel. Which is mostly symbolic to love, protection and peace. I thought this photograph would be relevant to what is happening in the world now especially with the situation in Ukraine.



EUROPHOTOMATH 2022, 5º Premio_

Parabolas in Real Life

ES Alicante

The bridge we can see in the photo was built using math.