Let's Make a Sierpinski Christmas Tree!

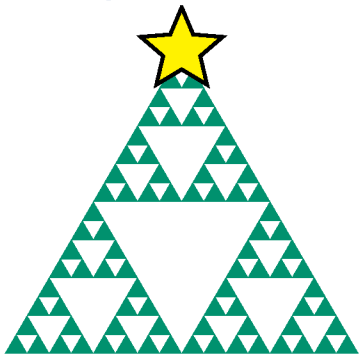

Figure 1. A Sierpinski Christmas tree

What is a Sierpinski Christmas tree?

A Sierpinski triangle is a repeating triangular pattern that looks the same at every scale. It is one example of what mathematicians call a *fractal*.

Drawing a Sierpinski triangle is easy! Divide a regular triangle into four identical regular triangles and remove the central triangle. Now, repeat this procedure of dividing and removing triangles as many times as you want. The shape that remains approximates a true Sierpinski triangle.

One can play this divide-and-remove game on a three-dimensional analogue of a triangle, the tetrahedron, and obtain a Sierpinski tetrahedron. If we paint that tetrahedron green, well, does not it look like a Christmas tree?

How can you participate?

We are building a giant Sierpinski Christmas tree out of tiny Sierpinski trees, and you can be part of it:

- Take as many green tetrahedron cut-out sheets from HEGL as you want.
- Customize the pieces and make them your own; we have metallic colored pens and other materials at HEGL that you can use.
- Cut out the pieces, fold them along the lines and glue them using the flaps; scotch tape works as well.
- Connect the four tetrahedra at the vertices using scotch tape.
- Drop off your mini-tree at HEGL (in Mathematikon, Room 99.102)

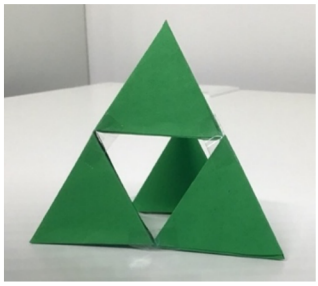

Figure 2. A mini Sierpinski Christmas tree

Drop off the pieces by Tuesday, December 14. We will then assemble the pieces and display the tree at the Lab.

If you have any questions, you can e-mail hegl@mathi.uni-heidelberg.de

Have a wonderful Christmas season!

SCAN ME