

3D printing of Sierpinski pyramid

Project from physics in elementary school „Vladimir Gortan“, Rijeka, Croatia, in collaboration with FractalFun project (<https://fractalfun.es/>)

Author: Toni Rebić, class 7a

Mentor: Dr Zlatko Majlinger

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The idea of the project: to prove that it is possible to print objects inside objects without the need to add support material to the interior

The goal was achieved and with this pyramid I proved that printing upside down conical shapes inside the original shape instead of some other possible shapes is very profitable.

Why a fractal pyramid?

Instead of anything, I chose to make Sierpinski's pyramid because prof. Majlinger introduced the FractalFun project. That Spanish project inspired me to start researching fractals. By purchasing a 3d printer, I enabled myself to realize my projects in ways I could never have imagined before.

Method of production

The printer I used is a relatively small but quite sufficient Creality ender 3 neo. At the time when I printed this pyramid, I was not yet familiar with the settings of the Ultimaker Cura program, which takes STL (stereolithography) files and converts them into a .gcode file format that (depending on the printer) is read, processed and used to guide stepper motors to movements which enable printing. My ignorance of the slicer resulted in the manufactured pyramid having small flaws in the interior, invisible to the untrained eye.

The fractal dimension of the Sierpinski pyramid is already known, so there was no need for me to calculate it.

Images:



Sources:

<https://www.printables.com/model/323483-smaller-version-of-spiral-vase-mode-sierpinski-pyr/files>

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