"In many plants the number and form in which the calyx-leaves (sepals), whether distinct or united, are arranged around the axis of the stalks, is constant; the same regularity being observable in the other subsequent organs. On this constancy of character depend, in great part, the progress, stability, and reputation of botanical science; which of late years has been making continual advances. There are, indeed, instances in which the number and form of these parts are not equally constant; yet even this incostancy has not baffled the keen powers of observation which distinguish the masters of science; on the contrary, they have endeavoured, by means of exact definitions, to impose a strict limit, so to speak, within which these aberrations of nature are restrained. "

—Goethe, *Metamorphosis of Plants*

The Trivial Notions Seminar
Proudly Announces

Phyllotaxis

A talk by
Sasha Petrov

Abstract

Many plants have their leaves, seeds or scales arranged in a cylindrical or spiral lattice (sunflowers, pineapples, pinecones...) It turns out that only lattices of special type appear in nature: those with numbers of parastichies given by two consecutive Fibonacci numbers (in exceptional cases Lucas numbers come up as well). There is a nice (yet possibly unsatisfactory from the point of view of biology) explanation of this phenomenon based on an analogy between cells of a plant and a system of repelling particles that tends to minimize certain energy functional. That model turns the problem into a question about zeroes of certain Maass forms for $\mathbf{SL}_2(\mathbf{Z})$.

Wednesday, March 4th, at 12:30 pm
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