LadHyX Seminar – September 10, 14:00

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Plant morphogenesis at LadHyX

What sets the size and form of organisms is still, by large, an open question. During this talk, I will present how we will address this question at LadHyX, and I will point to possible new internal collaborations, which could involve microfluidics, analysis of disordered vector fields, single-cell manipulation, the fluid mechanics of poroelastic media, or other unforeseen directions. I chose to work on Marchantia polymorpha, the common liverwort ("l'hépatique des fontaines"), because it may grow in liquid medium in microfluidic chambers, one of its life phases is essentially two-dimensional, and it is amenable to genetic manipulation. We will investigate how it grows as a thin, relatively flat sheet, and what sets the shape of its contours. Based on our previous work, we will consider water flow within the organism, which could be limiting for growth, and fluctuations in growth, which might enable the organism to sense its shape. We will thus combine approaches and concepts from both mechanics and biology to make progressing in addressing a longstanding question.