

LadHyX Seminar – October 1, 14:00

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How wind and light model tree architecture

The aerial part of trees can be viewed as a response to the following engineering problem: build a mechanically stable structure able to withstand strong winds, while allowing the tree a maximal access to sunlight. To respond to these conflicting requirements, tree grow by producing at each step “units” of similar size. It can thus seem paradoxal that its architecture is generally self-similar with branches statistically shorter and thinner near the foliage. Since branches cannot grow in length from year to year, this hierarchy is only possible through the end-to-end aggregation of different branches and the loss of lateral branches. The architecture of a tree is therefore the result of a complex growth strategy and history. During this seminar, I will present a model that aims to better understand these mechanisms.