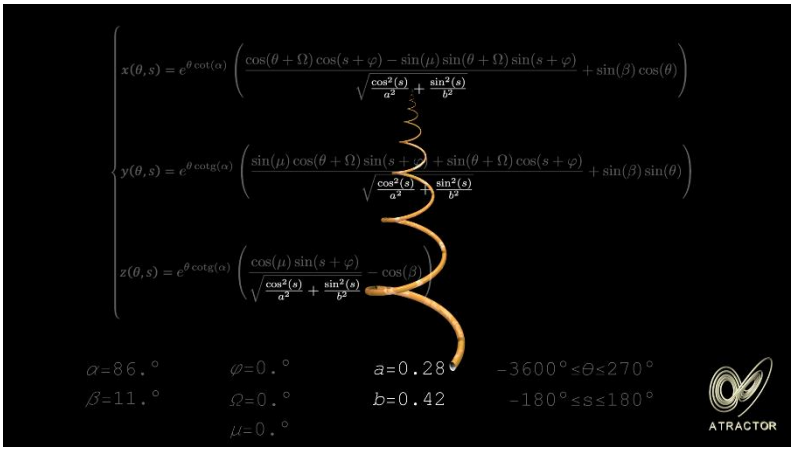
About the film “The math of the shells”

The film “The math of the shells” illustrates how the great majority of seashells existing in nature can be generated by a fixed set of equations by simply varying some parameters. This gives one more example of how the apparent complexity one sees in nature may have a much simpler mathematical inner structure.

The film is divided in two parts: first, we can observe the role of the different parameters of the mathematical model.



Then, after obtaining a first model of a seahell – a whelk –, the film goes on, illustrating a process to build sequentially seven other models of real seashells, by changing the values of the parameters.

At the very end, some other examples of real seashells obtained by other changes of the parameters are briefly displayed.

For detailed information on the mathematics background, we suggest consulting the contents available on Atractor's website about the subject:

http://www.atractor.pt/mat/conchas/index-_en.html

Possible interaction/activities with the visitors and didactics section

Being a movie, the module "The math of shell" is not intended to promote direct interaction with visitors. For further information and interaction, we suggest the use of the contents on the already mentioned Atractor's website: http://www.atractor.pt/mat/conchas/index-_en.html. In addition to detailed information on the subject, these contents contain a large number of interactive applications that the visitors can explore.

Some activities which can be developed, using Atractor's site, are games, where the visitors can match different seashells to their corresponding model parameters. For that purpose, Atractor has produced several games:

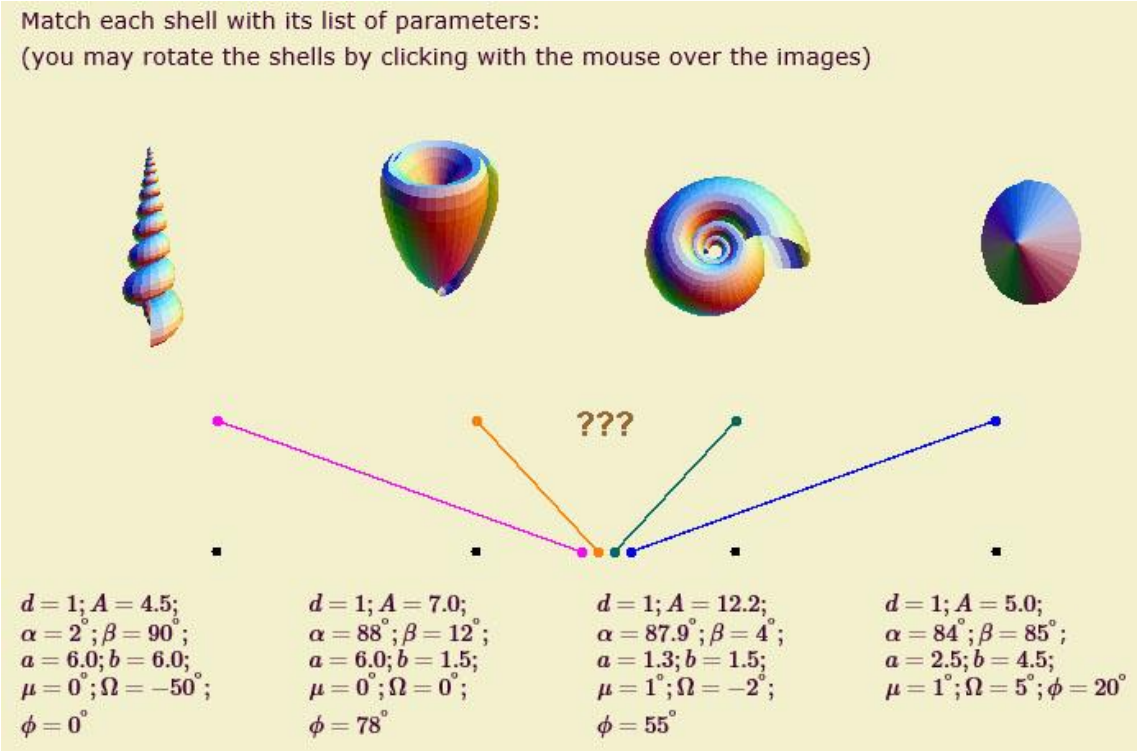
http://www.atractor.pt/mat/conchas/jogo-_en.html

http://www.atractor.pt/mat/conchas/jog2-_en.html

http://www.atractor.pt/mat/conchas/jog3-_en.html

http://www.atractor.pt/mat/conchas/jog4-_en.html

Remark: to play these games, you should have a browser that reads Java (presently, Internet Explorer and Safari).



These kind of games can also be played "physically": using both prints of seashell images (or even real seashells) and cards with the corresponding parameters, the visitor can be invited to make a match between them. And, for the eight seashells shown in the film, it is possible to confirm one's answer by watching the movie again.

About the author

Atractor is a non-profit private association created in April 1999, in Portugal, for the popularization of Mathematics. Its purpose is to attract people to Mathematics at different levels, trying to reach the broadest possible cross-section of the public.

In recent years, Atractor has focused on producing virtual contents and exhibits, and nowadays Atractor offers a wide range of resources which can be used both for teaching and for the communication of mathematics. Some of the virtual materials produced by Atractor include: 1) small mathematical movies disseminated in its YouTube channel, 2) mathematical objects (some of them interactive) created for use with 3D televisions and 3D stereo projectors, 3) realistic virtual versions of physical exhibits or models, 4) publication of free software like GeCla and AtrMini, 5) creation of interactive contents for its site (which is being fully translated into English).

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