Dynamic Geometry vs Game Physics software

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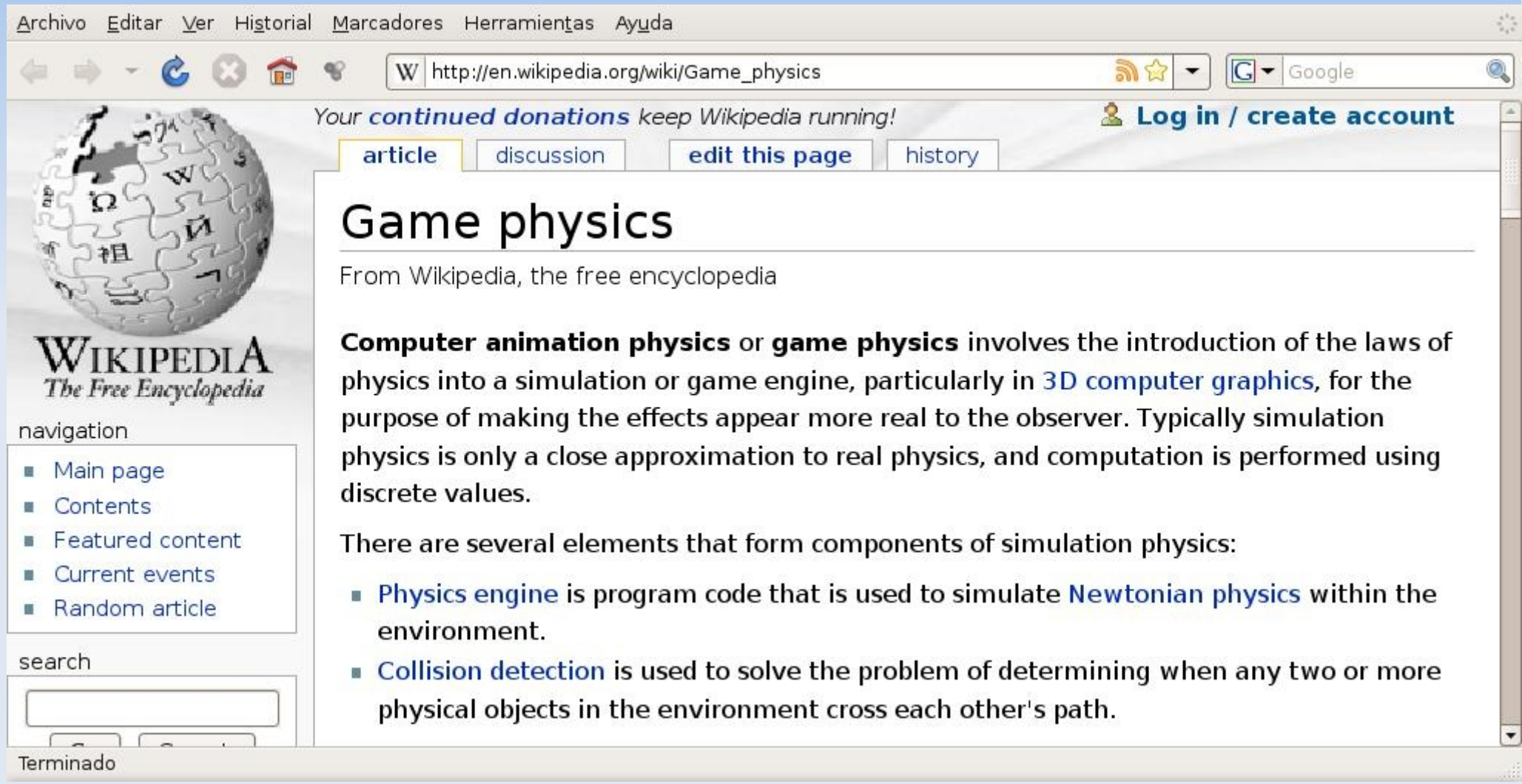
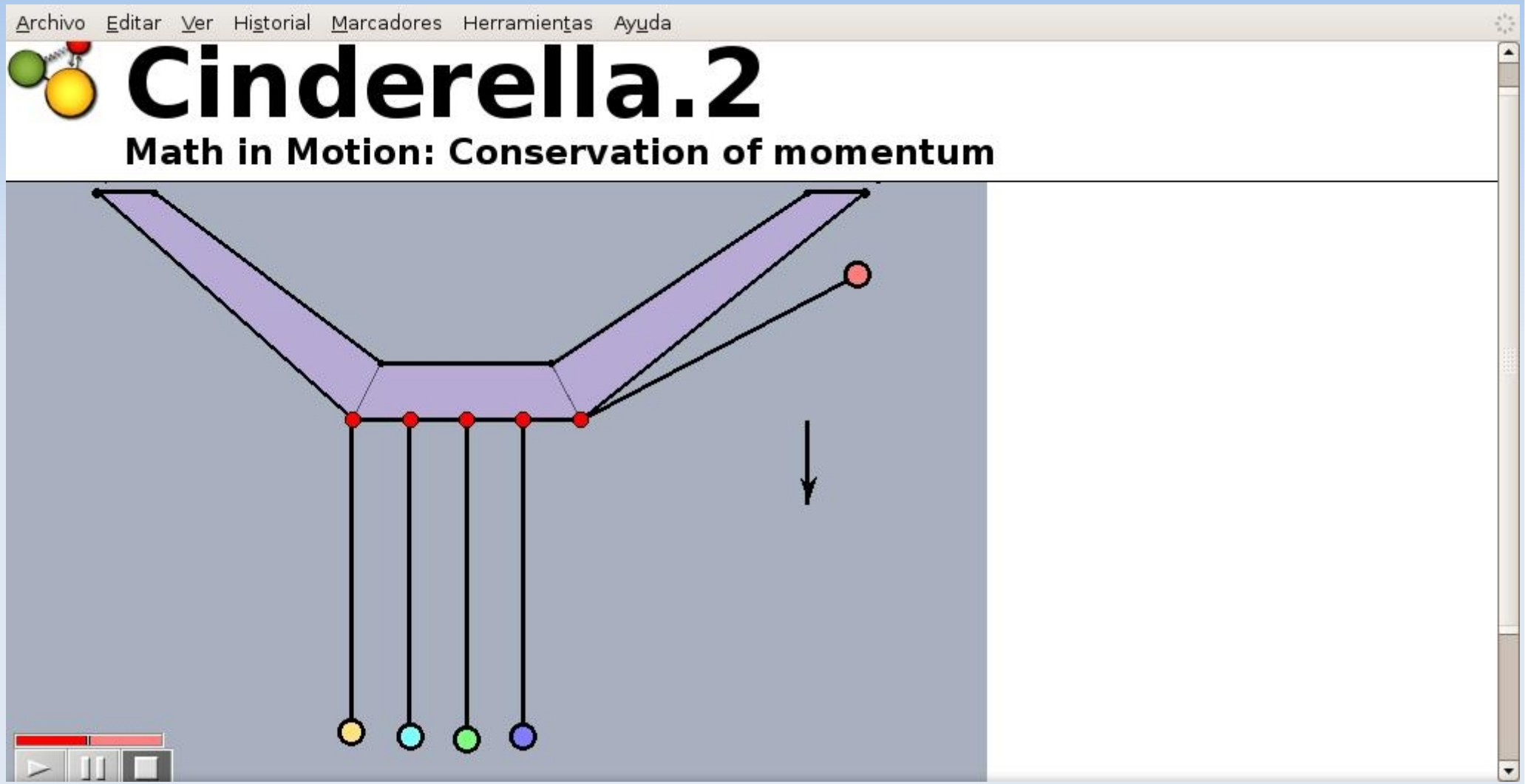
Outline

- What is Game Physics (GP) software?
- Phun
- Comparing constructions: four bar linkage, a mathematical machine, finding the centroid of a triangle
- Conclusion

Game Physics software



Game Physics software



Game Physics software

Game Physics software offers an environment where Newtonian laws are simulated allowing the user to play with a virtual microworld of simple objects.

The idea is not new to DG tools:

Cinderella

Geometry Expert

The Geometer's Sketchpad

Phun


File
Sim control
Toolbar
Options
Help!
About Phun
Object menu
Phun beta 4.13
Undo
sim start
Redo
Zoom: 0.42x
WELCOME TO
PHUN

Phun

Phun is a free game like *2D physics sandbox* where you can play with physics like never before. The playful synergy of science and art is novel, and makes Phun as educational as it is entertaining.

Great for kids

Phun is a fantastic toy for children, where they can learn and appreciate physics, science and simulations in an open ended gameplay with rich creative and artistic freedom, including colorful freehand drawing.

Phun in Japan!

Monster truck.

and everyone else...

But watch out, Phun is also totally addictive to the rest of us! Experienced users create fabulous machines and elaborate mechanism using Phun, as well as games, comics and contemporary art. See more of Phun in the media section, or go download it!

...and for free!

High tech fun by Algoryx

It may look like a toy, but Phun is based on highly competitive technologies for interactive multiphysics simulation, ranging from novel physical models and variational integrators to high performance numerical methods. Phun is off-spring from research at Umeå university, and a MSc project of Emil Ernerfeldt, now further developed at Algoryx Simulation. Algoryx also develops a professional 3D multiphysics engine called AgX.

News

Join our mailing list for the latest updates.

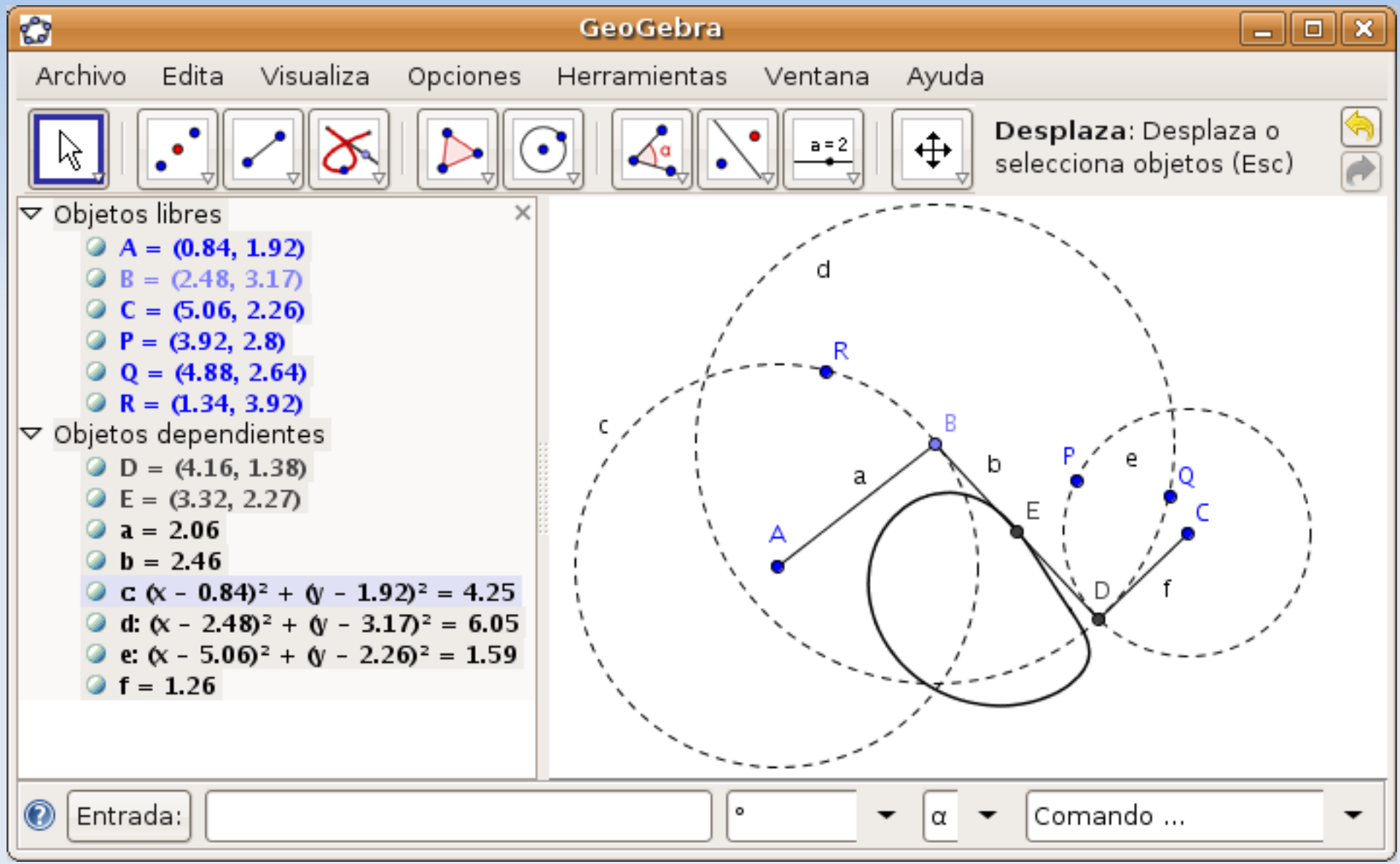
- **June 2** A nice review by Physics World.
- **Mar 24** Beta 5 released! Go download it!
- **Jan 16** Check out our new YouTube video of Algodoo!
- **Jan 14 2009** New educational product, Algodoo by Algoryx, released at the BETT show Jan 14-17.
- **Nov 23:** We have received many, many requests to install Phun in schools all over the world. We estimate that Phun b4.22 will be installed on more than 300.000 school computers by the end of the

Constructions I: Four bar linkage

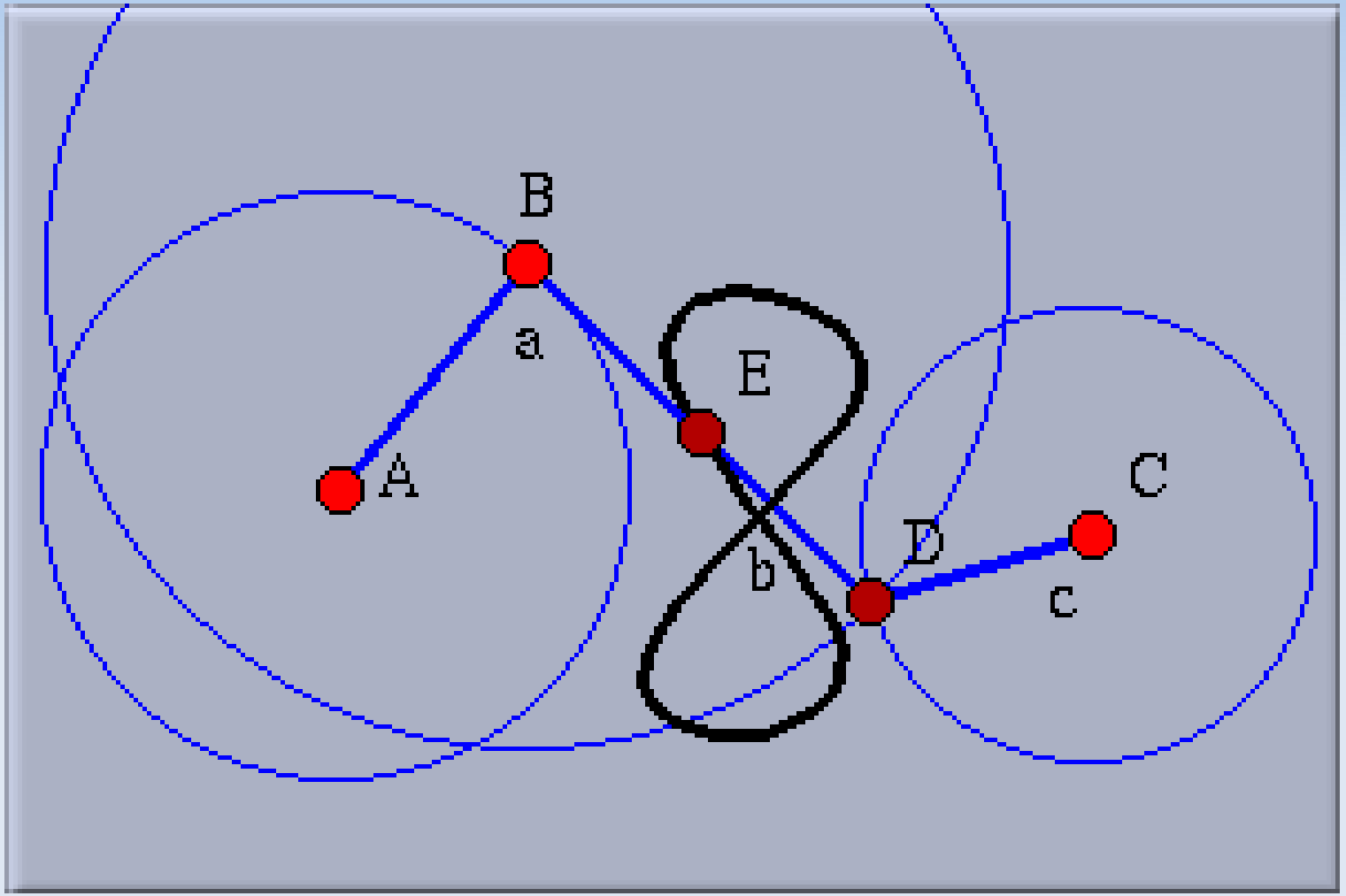
A DG algorithm

- Construct a circle centered in A and passing through B
- Construct another circle centered in B
- Construct another circle with center C, not intersecting the first one
- Construct an intersection point D on the second and third circles
- Construct the midpoint E of segment BD
- Use the Locus tool (tracer E, mover B)

Constructions I: Four bar linkage



Constructions I: Four bar linkage



Constructions I: Four bar linkage

Constructions II: A math machine

Mostra "Theatrum Machinarum"

(strumenti per la geometria)

http://www.museo.unimo.it/theatrum/

Constructions II: A math machine

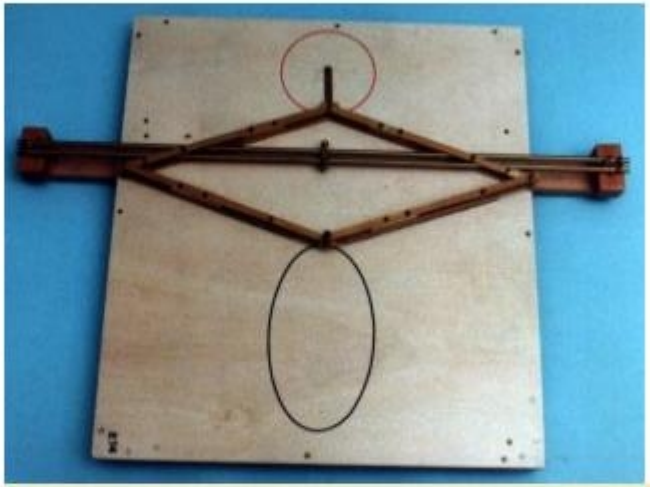
Archivo Editar Ver Historial Marcadores Herramientas Ayuda

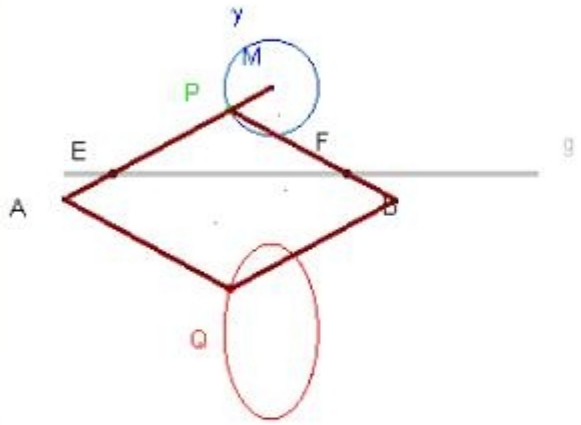
laboratorio

- INTRODUZIONE
- Sezioni coniche
- Proiezioni e Prospettiva
- Trasformazioni
- Curvigrafi
- Risoluzione di prolemi
- Elenco alfabetico dei modelli
- Bibliografia generale
- Guida alla consultazione

Ellissografo di Delaunay

Modello Dimostr Simulaz Bibliogr Mostra





Dim. in cm 82 x 61 x 11

Il vertice P del rombo articolato PABQ è vincolato mediante l'asta PM a percorrere la circonferenza γ. Poichè i punti E ed F, fissati rispettivamente sui lati PA e PB a uguale distanza da P, sono costretti a scorrere lungo la guida g, il punto Q, quarto vertice del rombo, descrive una ellisse avente

Theatrum Machinarum *on line*

Go Theatrum!

Constructions II: A math machine

Constructions III: Centroid

To explore

- Intercommunication between Game Physics and Dynamic Geometry software

InterGeo

+

InterPhysics

=

InterScience

Conclusion

- Game Physics software can be used as a complement of standard DG programs.
- Its non exact approach can stimulate using DG.
- DG techniques can enhance GP software
- GP is an emerging tool: teachers must be aware of it, and be prepared for using it.

Thank you!