

Sage: una panoramica

Sage

Una introduzione molto rapida

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Sage: distribuzione di software matematico

ATLAS	Automatically Tuned Linear Algebra Software
BLAS	Basic Fortan 77 linear algebra routines
Bzip2	High-quality data compressor
Cddlib	Double Description Method of Motzkin
Common Lisp	Multi-paradigm and general-purpose programming lang.
CVXOPT	Convex optimization, linear programming, least squares
Cython	C-Extensions for Python
F2c	Converts Fortran 77 to C code
Flint	Fast Library for Number Theory
FpLLL	Euclidian lattice reduction
FreeType	A Free, High-Quality, and Portable Font Engine

Sage: distribuzione di software matematico

G95	Open source Fortran 95 compiler
GAP	Groups, Algorithms, Programming
GD	Dynamic graphics generation tool
Genus2reduction	Curve data computation
Gfan	Gröbner fans and tropical varieties
Givaro	C++ library for arithmetic and algebra
GMP	GNU Multiple Precision Arithmetic Library
GMP-ECM	Elliptic Curve Method for Integer Factorization
GNU TLS	Secure networking
GSL	Gnu Scientific Library
JsMath	JavaScript implementation of LaTeX

Sage: distribuzione di software matematico

IML	Integer Matrix Library
IPython	Interactive Python shell
LAPACK	Fortan 77 linear algebra library
Lcalc	L-functions calculator
Libgcrypt	General purpose cryptographic library
Libgpg-error	Common error values for GnuPG components
Linbox	C++ linear algebra library
Matplotlib	Python plotting library
Maxima	computer algebra system
Mercurial	Revision control system
MoinMoin	Wiki

Sage: distribuzione di software matematico

MPFI	Multiple Precision Floating-point Interval library
MPFR	C library for multiple-precision floating-point computations
ECLib	Cremona's Programs for Elliptic curves
NetworkX	Graph theory
NTL	Number theory C++ library
Numpy	Numerical linear algebra
OpenCDK	Open Crypto Development Kit
PALP	A Package for Analyzing Lattice Polytopes
PARI/GP	Number theory calculator
Pexpect	Pseudo-tty control for Python
PNG	Bitmap image support

Sage: distribuzione di software matematico

PolyBoRi	Polynomials Over Boolean Rings
PyCrypto	Python Cryptography Toolkit
Python	Interpreted language
Qd	Quad-double/Double-double Computation Package
R	Statistical Computing
Readline	Line-editing
Rpy	Python interface to R
Scipy	Python library for scientific computation
Singular	fast commutative and noncommutative algebra
Scons	Software construction tool
SQLite	Relation database

Sage: distribuzione di software matematico

Sympow	L-function calculator
Symmetrica	Representation theory
Sympy	Python library for symbolic computation
Tachyon	lightweight 3d ray tracer
Termcap	for writing portable text mode applications
Twisted	Python networking library
Weave	Tools for including C/C++ code within Python
Zlib	Data compression library
ZODB	Object-oriented database

Molti altri ancora...

Sage: distribuzione di software matematico

Algebra	GAP, Maxima, Singular, . . .
Algebra lineare (esatto)	Linbox, IML, . . .
Algebra lineare (numerica)	GSL, Scipy, Numpy, . . .
Aritmetica in precisione arbitraria	GMP, MPFR, MPFI, NTL, . . .
Calcolo	Maxima, Sympy, . . .
Combinatorio	Symmetrica, MuPAD-Combinat*, . . .
Geometria algebrica	Singular, . . .
Geometria aritmetica	PARI, NTL, mwrnk, ecm, . . .
Teoria dei Grafi	NetworkX, . . .
Teoria dei Gruppi	GAP, . . .

Sage: python

Tutti questi software sono messi assieme in una interfaccia che si basa su **Python**

Python e' un linguaggio

- strongly typed (i.e. types are enforced),
- dynamically, implicitly typed (i.e. you don't have to declare variables),
- case sensitive (i.e. var and VAR are two different variables),
- object-oriented (i.e. everything is an object).

<http://www.python.org/>

Sage: references

<http://www.sagemath.org/>

<http://www.python.org/>
Dive into Python

<http://doc.python.org/tut>

<http://www.poromenos.org/tutorials/python>

Sage: free software

Sage viene distribuito con
Licenza **GNU/GPL**

=

Free software

Free Software Foundation

<http://www.fsf.org/>



Open Source Initiative

<http://www.opensource.org/>



Sage: installazione

Linux o Mac OS X: - scaricare il programma eseguibile
- scaricare il sorgente e compilarlo

Windows: Sage dipende da molte componenti che non sono ancora disponibili per Microsoft Windows.

- (consigliato) [VirtualBox for Windows](#) oppure [VMWare Player](#).

Dopo e' sufficiente lanciare la distribuzione di Sage per VirtualBox o VMWare (e' bene dare un'occhiata al sito www.sagemath.org). L'immagine attuale VirtualBox vi fornisce un sistema incapsulato e solida testato e contiene tutto ciò e ha bisogno quasi alcuna configurazione.

- Un'altra possibilita' e' usare [Sage inside Wubi](#). Wubi e' una distribuzione di Linux Ubuntu che si installa in Windows.

- (prossimamente) Cygwin.

Live USB: <http://www.sagemath.org/download-liveusb.html>

SageMath is a free [open-source](#) mathematics software system licensed under the GPL. It builds on top of many existing open-source packages: [NumPy](#), [SciPy](#), [matplotlib](#), [SymPy](#), [Maxima](#), [GAP](#), [FLINT](#), [R](#) and many more. Access their combined power through a common, Python-based language or directly via interfaces or wrappers.

Mission: *Creating a viable free open source alternative to Magma, Maple, Mathematica and Matlab.*

Do you want to learn how to use SageMath?
 Read [Sage for Undergraduates](#) by Gregory Bard or
[Mathematical Computation with Sage](#) by Paul Zimmermann et. al.
 translations: [Calcul mathématique avec Sage](#) (French), [Rechnen mit Sage](#) (German)

CoCalc (SageMathCloud)

or: SageMathCell



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Unrated

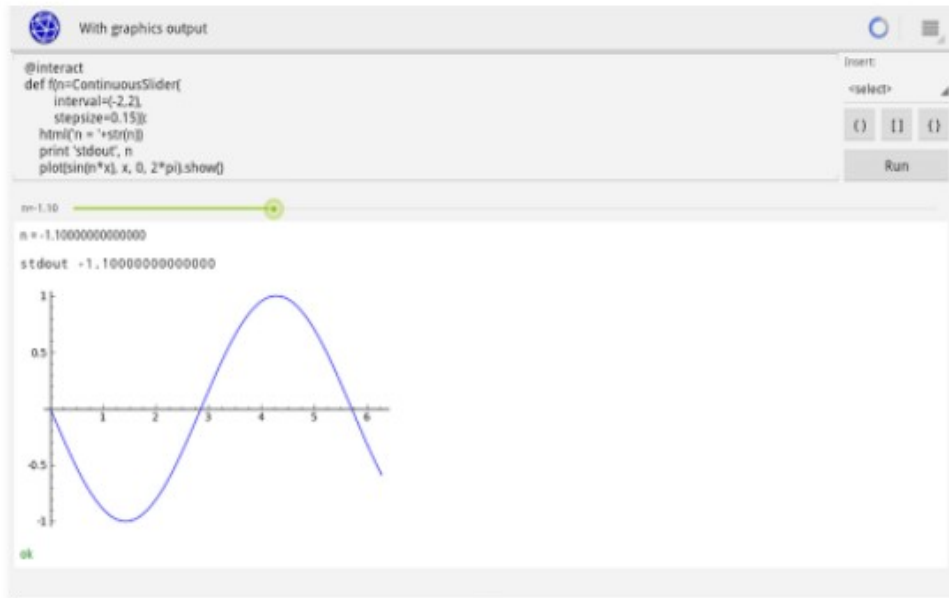
This app is compatible with all of your devices.

★★★★★

Get it on
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Installed



iTunes Preview

Sage Math

By Ivan Andrus

Open iTunes to buy and download apps.



View in iTunes

This app is designed for both iPhone and iPad

Free

Category: Education
Updated: Jan 31, 2013
Version: 2.1.1
Size: 0.8 MB
Language: English
Seller: Ivan Andrus
© Ivan Andrus
Rated 4+

Compatibility: Requires iOS 4.3 or later. Compatible with iPhone, iPad, and iPod touch.

Customer Ratings

Current Version:
★★★★★ 17 Ratings
All Versions:
★★★★★ 30 Ratings

Description

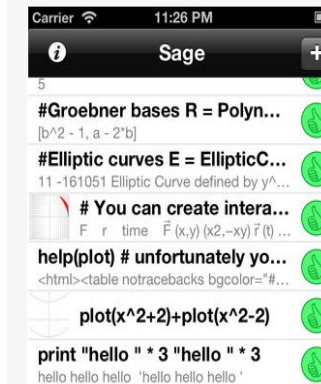
A simple interface to the Sage computer algebra system. Through Sage it provides access to the GAP, GP, Maxima, Octave, R, and Singular computer algebra systems as well as Python and HTML. Knowledge of one of these systems is highly recommended.

[Ivan Andrus Web Site](#) [Sage Math Support](#)

What's New in Version 2.1.1

Fixed crash in iPad version when changing programming language.

Screenshots



Android client for the Sage open-source mathematical software system.

Please use <http://groups.google.com/group/sage-devel> for feedback until the release is finished!

GPL source code at <https://github.com/sagemath/android>

Sage: Server online

Server on line

<https://cocalc.com/>

<https://sagecell.sagemath.org/>

Sage: Server SageMathCell



Type some Sage code below and press Evaluate.

```
1 |
```

Evaluate

About

[SageMathCell](#) project is an easy-to-use web interface to a free open-source mathematics software system [SageMath](#).

It allows **embedding Sage computations into any webpage**: check out [short instructions](#) or [comprehensive description of capabilities](#).

Resources for your computation are provided by [Departamento de Matemáticas, Universidad Autónoma de Madrid](#). You can easily [set up your own server](#).

General Questions on Using Sage

There are [a lot of resources](#) available to help you use Sage. In particular, you may ask questions on [sage-support](#) discussion group or [ask.sagemath.org](#) website.

Sage: scrittura intuitiva

Facile da leggere:

Matematica:

$\{ 5 \cdot x \mid x \in \{ 0, 1, \dots, 10 \} \text{ se } x \text{ e' dispari} \}$

Python:

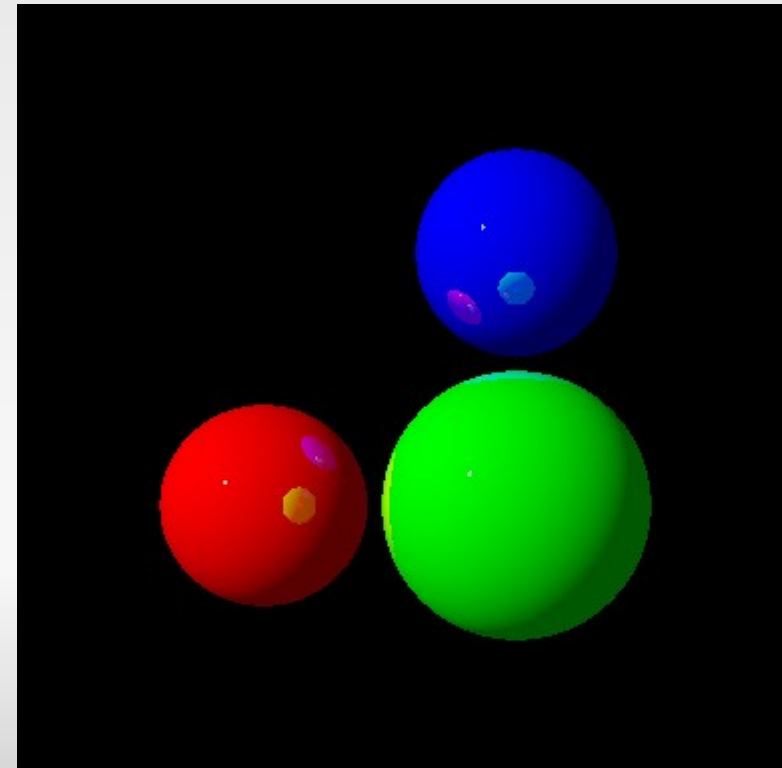
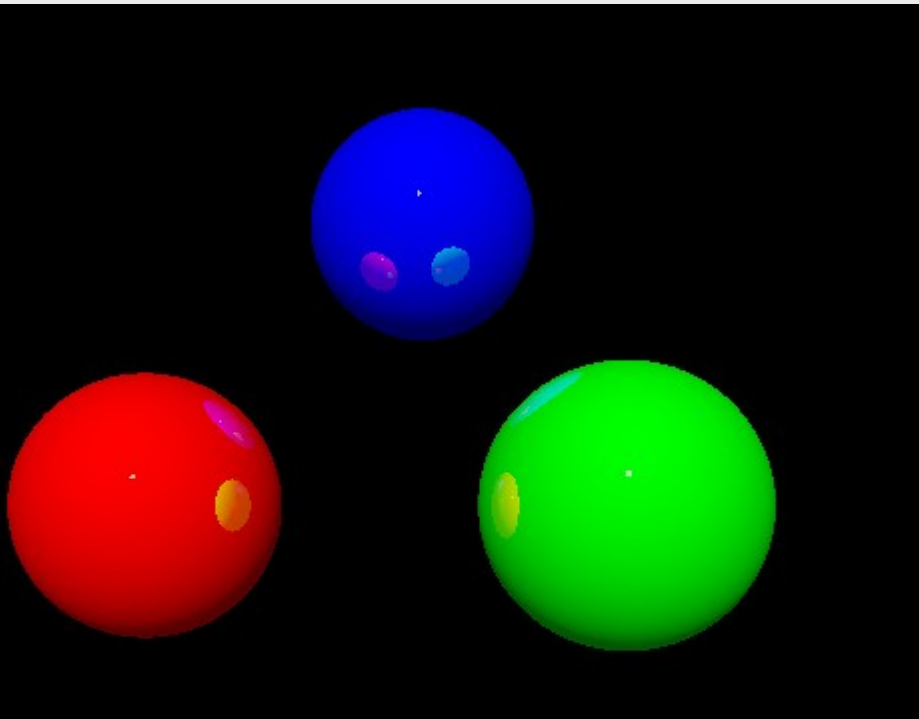
`[5*x for x in range(11) if x%2 == 1]`

Ricorsivita'. Es. $n! = n \cdot (n-1) \cdot (n-2) \cdot \dots \cdot 2 \cdot 1 = n \cdot (n-1)!$

```
def fa(n):  
    if n==1:  
        return 1  
    else:  
        return n*fa(n-1)
```

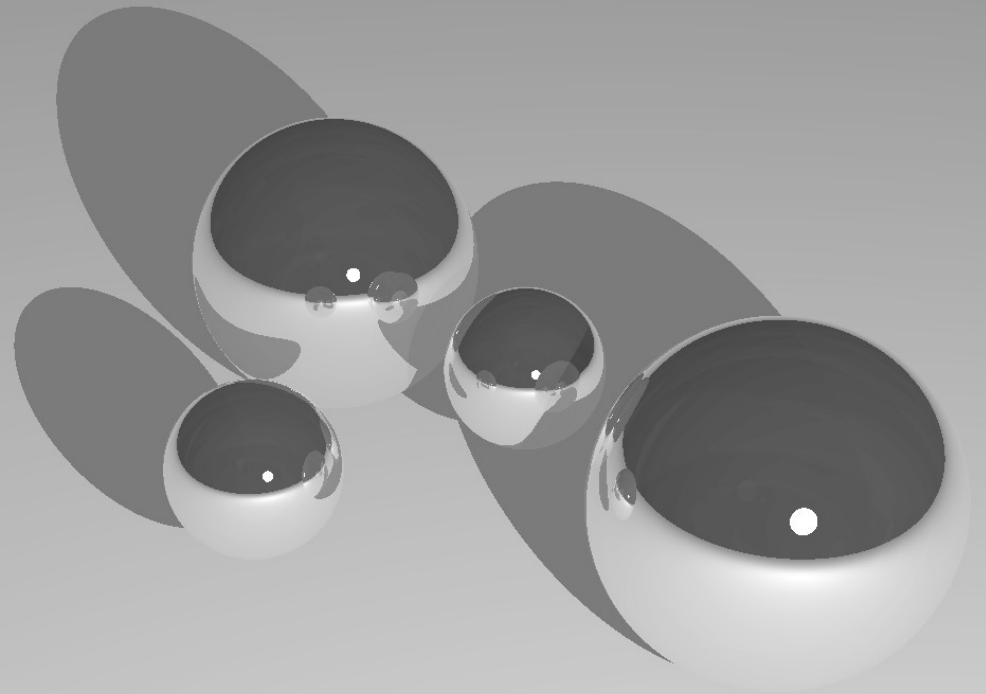
Sage: grafica

```
t = Tachyon(xres=500,yres=500, camera_center=(1.5,1,0))    # camera_center=(2,0,0)
t.light((4,3,2), 0.2, (1,1,1))
t.texture('t2', ambient=0.1, diffuse=0.9, specular=0.5, opacity=1.0, color=(1,0,0))
t.texture('t3', ambient=0.1, diffuse=0.9, specular=0.5, opacity=1.0, color=(0,1,0))
t.texture('t4', ambient=0.1, diffuse=0.9, specular=0.5, opacity=1.0, color=(0,0,1))
t.sphere((0,0.5,0), 0.2, 't2')
t.sphere((0.5,0,0), 0.2, 't3')
t.sphere((0,0,0.5), 0.2, 't4')
t.show()
```



Sage: grafica

```
t = Tachyon(camera_center=(8.5,5,5.5), look_at=(2,0,0), raydepth=6,
xres=1500, yres=1500)
t.light((10,3,4), 1, (1,1,1))
t.texture('mirror', ambient=0.05, diffuse=0.05, specular=.9,
opacity=0.9, color=(.8,.8,.8))
t.texture('grey', color=(.8,.8,.8), texfunc=7) ## try other values of
texfunc too!
t.plane((0,0,0),(0,0,1),'grey')
t.sphere((4,-1,1), 1, 'mirror')
t.sphere((0,-1,1), 1, 'mirror')
t.sphere((2,-1,1), 0.5, 'mirror')
t.sphere((2,1,1), 0.5, 'mirror')
show(t)
```

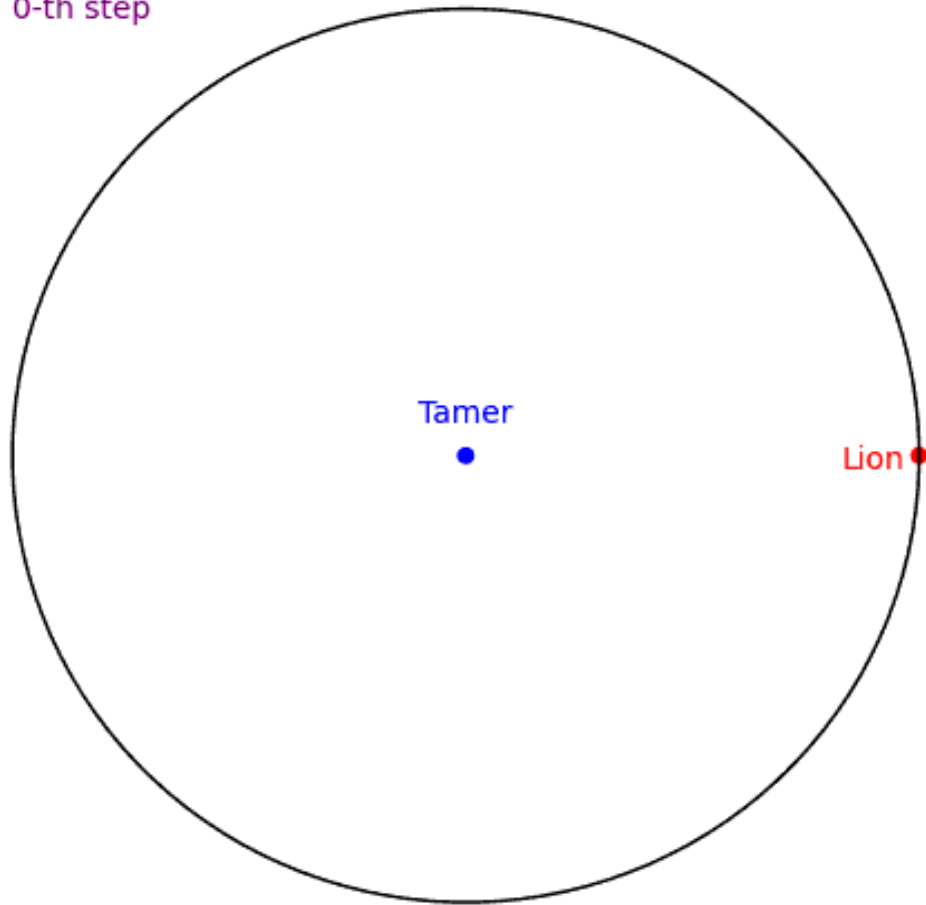


Sage: giochi

Relative speed: Lion/Tamer = 4

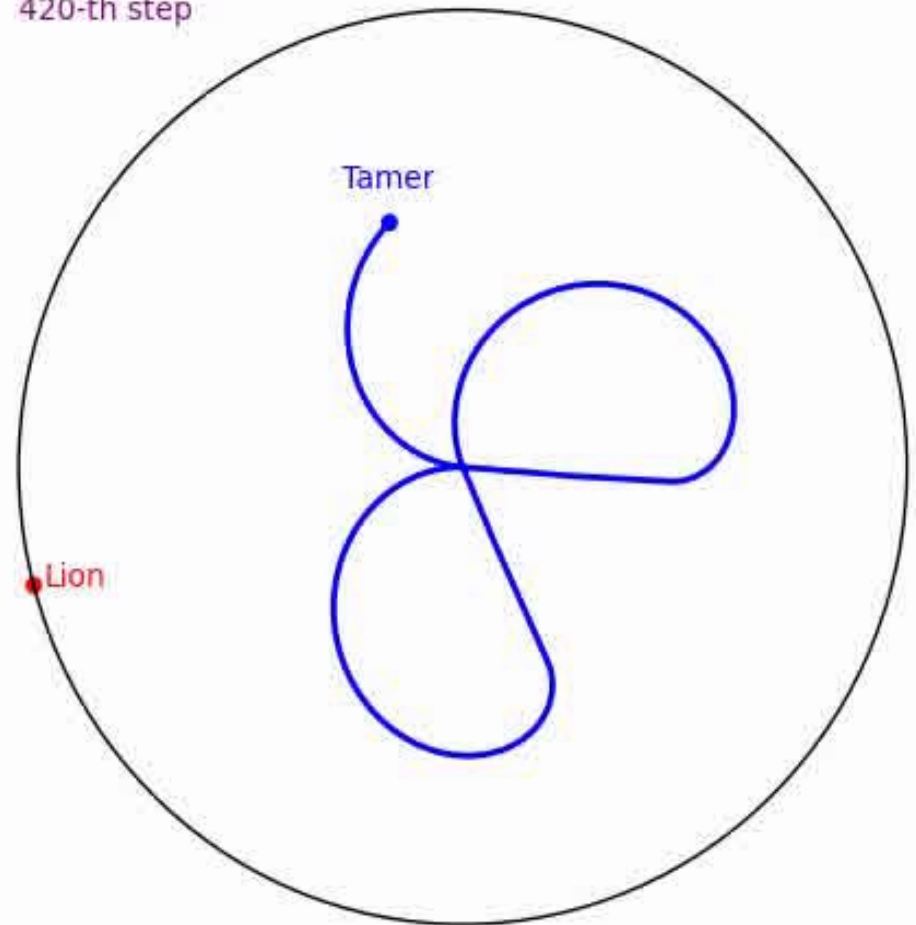
Tamer step = 0.010 times the radius

0-th step



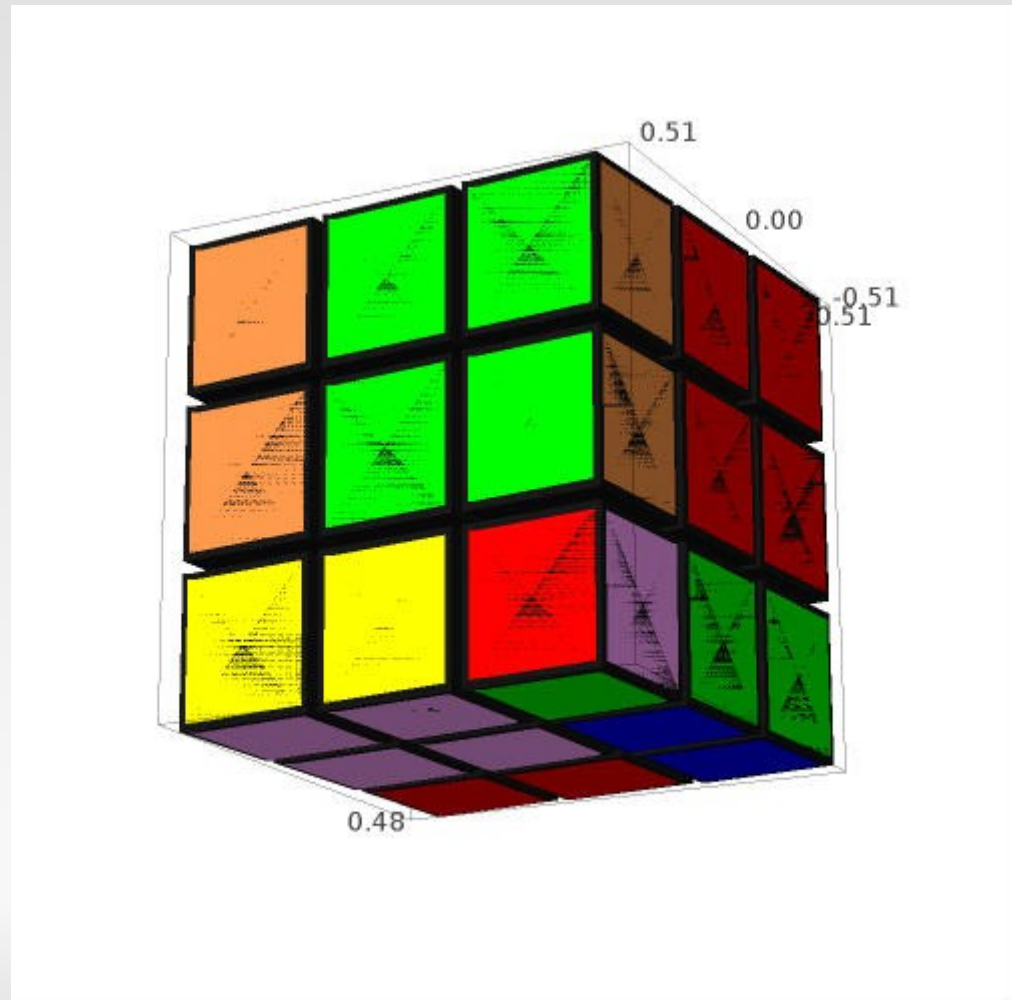
Sage: giochi

Relative speed: Lion/Tamer = 4
Tamer step = 0.010 times the radius
420-th step



Sage: giochi

```
C = RubiksCube().move("R U R U")  
C.show3d()
```



Sage: giochi

```
g = Sudoku('1....7.9..3..2...8..96..5....53..9...1..8...26....4...3.....1..4.....7..7...3..')
```

```
+-----+-----+-----+
| 1   |   7| 9   |
|  3  |  2 |  8  |
|   9|6   |5   |
+-----+-----+-----+
|   5|3   |9   |
|  1  |  8 |  2  |
| 6   |   4|   |
+-----+-----+-----+
| 3   |   | 1   |
|  4  |   |   7|
|   7|   | 3   |
+-----+-----+-----+
```

```
+-----+-----+-----+
| 1 6 2|8 5 7|4 9 3|
| 5 3 4|1 2 9|6 7 8|
| 7 8 9|6 4 3|5 2 1|
+-----+-----+-----+
| 4 7 5|3 1 2|9 8 6|
| 9 1 3|5 8 6|7 4 2|
| 6 2 8|7 9 4|1 3 5|
+-----+-----+-----+
| 3 5 6|4 7 8|2 1 9|
| 2 4 1|9 3 5|8 6 7|
| 8 9 7|2 6 1|3 5 4|
+-----+-----+-----+
```

```
g.solve().next()
```