General relativity computations with SageManifolds

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on behalf on SageManifolds team:

http://sagemanifolds.obspm.fr/authors.html

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SageMath in a few words

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The mission

Create a viable free open source alternative to Magma, Maple, Mathematica and Matlab.

Some advantages of SageMath

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Freedom means

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- easy access for students
- Python is a very powerful *object oriented language*, with a neat syntax

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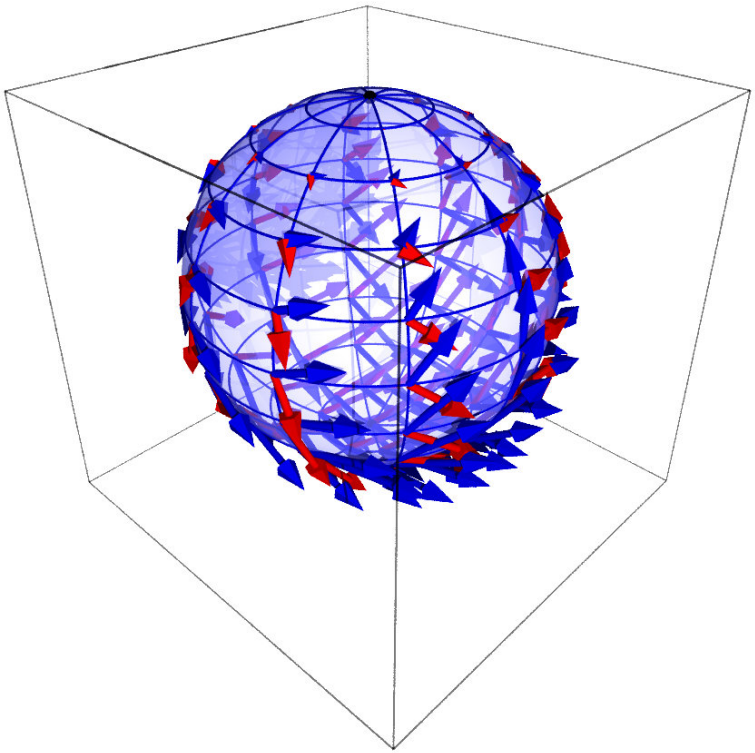
SageMath is developing and spreading fast

...sustained by an enthusiastic community of developers

The SageManifolds project

SageManifolds: extending SageMath towards **differential geometry** and **tensor calculus**



Stereographic-coordinates frame on $\mathbb{S}^2$

- http://sagemanifolds.obspm.fr/
- $\sim$ 75,000 lines of Python code (including comments and doctests)
- submitted to SageMath community as a sequence of $\sim$ 50 tickets
  cf. list at https://trac.sagemath.org/ticket/18528
- a dozen of contributors (developers and reviewers)
  cf. http://sagemanifolds.obspm.fr/authors.html

SageManifolds 1.2 released on 5 May 2018 and fully included in SageMath 8.2

Let us try it!

Click on the links below:

- Schwarzschild spacetime:
  http://nbviewer.jupyter.org/urls/gitlab.obspm.fr/gourgoul/SageMathTour/raw/master/Notebooks/demo_Schwarzschild.ipynb
- Surface gravity of a Schwarzschild black hole:
  http://nbviewer.jupyter.org/urls/gitlab.obspm.fr/gourgoul/SageMathTour/raw/master/Notebooks/surface_gravity_Schwarz.ipynb