



# ВШЭ и Python (+ PyData / SciPy)

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Проектная группа “Статистическая механика сложных систем”



05.10.2021

# Экосистема PyData/SciPy



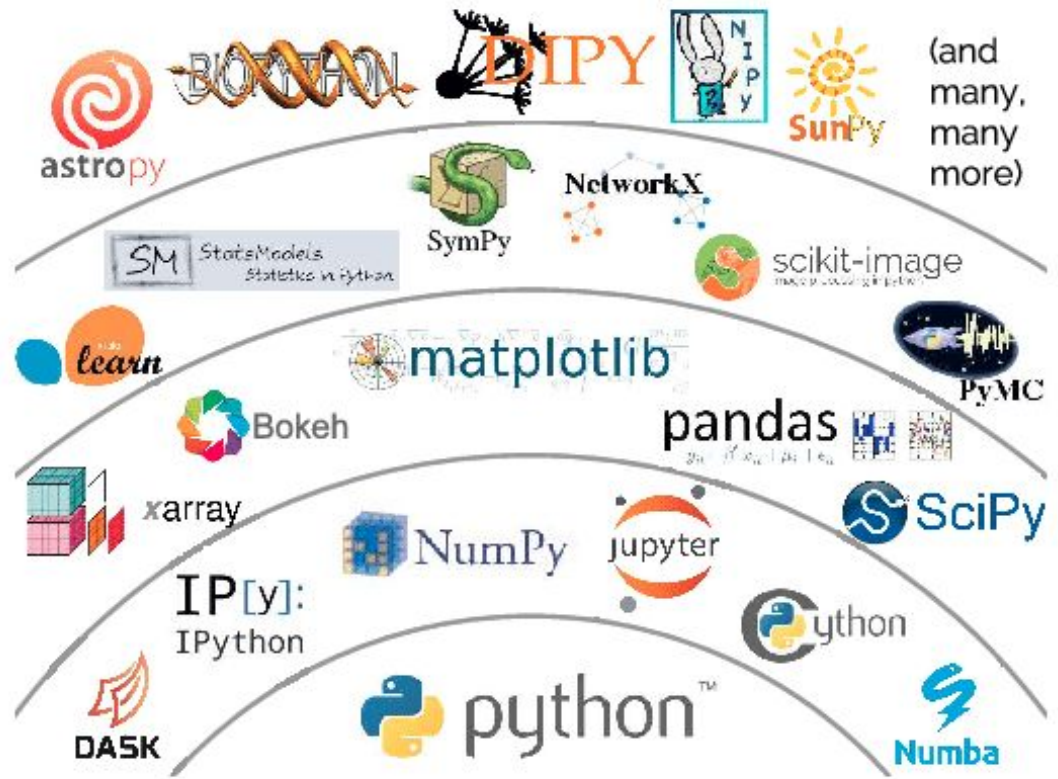
- Учебный процесс
- Исследования и разработки
- Индустриальные решения

ML / AI, Big data, HPC,

задачи анализа данных

Aug 2021	Aug 2020	Change	Programming Language	Ratings	Change
1	1		 C	12.57%	-4.41%
2	3	▲	 Python	11.86%	+2.17%
3	2	▼	 Java	10.43%	-4.00%
4	4		 C++	7.36%	+0.52%
5	5		 C#	5.14%	+0.46%

# Экосистема PyData/SciPy : Open Source Software



# Международная коллаборация Scientific Python

Perspective | [Open Access](#) | Published: 03 February 2020

## SciPy 1.0: fundamental algorithms for scientific computing in Python

[Pauli Virtanen](#), [Ralf Gommers](#) , [Travis E. Oliphant](#), [Matt Haberland](#) , [Tyler Reddy](#) , [David Cournapeau](#), [Evgeni Burovski](#), [Pearu Peterson](#), [Warren Weckesser](#), [Jonathan Bright](#), [Stéfan J. van der Walt](#), [Matthew Brett](#), [Joshua Wilson](#), [K. Jarrod Millman](#), [Nikolay Mayorov](#), [Andrew R. J. Nelson](#), [Eric Jones](#), [Robert Kern](#), [Eric Larson](#), [C J Carey](#), [Ilhan Polat](#), [Yu Feng](#), [Eric W. Moore](#), [Jake VanderPlas](#), [Denis Laxalde](#), [Josef Perktold](#), [Robert Cimrman](#), [Ian Henriksen](#), [E. A. Quintero](#), [Charles R. Harris](#), [Anne M. Archibald](#), [Antônio H. Ribeiro](#), [Fabian Pedregosa](#), [Paul van Mulbregt](#) & SciPy 1.0 Contributors -Show fewer authors

*Nature Methods* **17**, 261–272 (2020) | [Cite this article](#)

**108k** Accesses | **2990** Citations | **886** Altmetric | [Metrics](#)

34 + 77 авторов

UC Berkeley, **ВШЭ**, LANL, UT Austin, UoW, UMass, Australian NSTO, UoA, CNRS, U Tallinn...

Google, Enthought, Quansight, ABB, Intel, D.E. Shaw, Chan Zuckerberg Biohub, ...

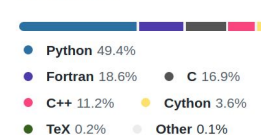
### SciPy 1.0 Contributors



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# Перевернутая пирамида Open Source

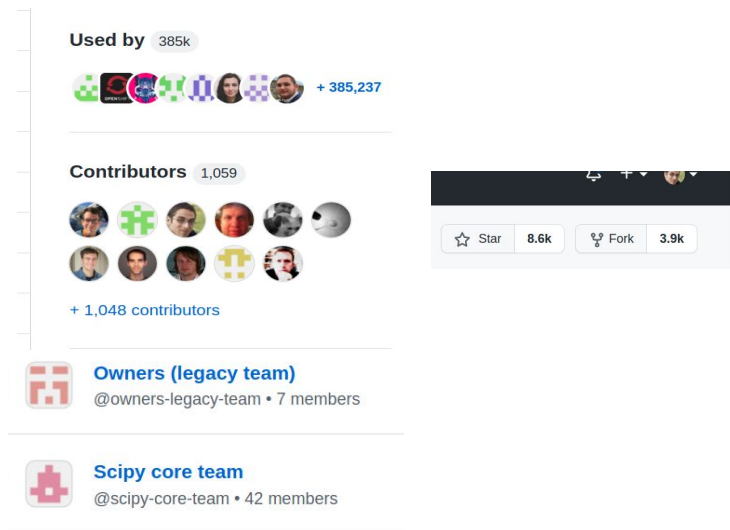
Languages



$10^7$  загрузок / месяц

PyPI downloads 29M/month | Conda downloads 18M

$10^5$  GitHub “пользователей”



$10^3$  участников

40 core team

7 owners team

# Источники финансирования

The tide starts turning? (~2019-)

- LANL (internal), JPL (internal), Brookhaven (internal)
- U Berkeley (internal)
- NSF Essential software program (U.S. only)
- NASA Roses (U.S. only)
- Chan-Zuckerberg foundation
- Moore-Sloan foundation
  
- INRIA (Scikit-learn foundation)

~ 5-10 FTE worldwide

# Привлечение студентов

## BUG: fix CubicSpline(..., bc\_type="periodic") #11758 #13097

Merged rgommers merged 2 commits into `scipy:master` from `egorz734:master` on Nov 25, 2020

Conversation 9 Commits 2 Checks 11 Files changed 2



egorz734 commented on Nov 19, 2020 • edited

Contributor

Reference issue

Closes #11758

## BUG: sparse: 'diagonal' of sparse matrices fixed to match numpy behaviour #11970

Merged perimoscordiae merged 4 commits into `scipy:master` from `ADmitri42:fix_issue_11949` on May 2, 2020

Conversation 12 Commits 4 Checks 9 Files changed 5



ADmitri42 commented on Apr 29, 2020

Contributor

Reference issue

Closes #11949

## DEV: scipy.interpolate b-splines (periodic case) #13701

Merged tylerjreddy merged 8 commits into `scipy:master` from `egorz734:bspline_periodic` on May 25

Conversation 33 Commits 8 Checks 21 Files changed 2



diana-sukhovkova commented on Mar 18

Contributor

What does this implement/fix?

We developed and implemented an algorithm for computing coefficients for B-splines of degree  $k$  in periodic case. The algorithm

## ENH: numpy masked\_arrays in reguide-check #14751

Merged rgommers merged 1 commit into `scipy:master` from `ev-br:reguide_check_masked_arrays` 9 days ago

Conversation 2 Commits 1 Checks 19 Files changed 1



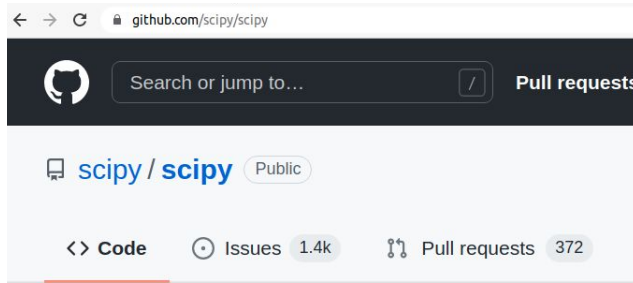
ev-br commented 9 days ago • edited

Member

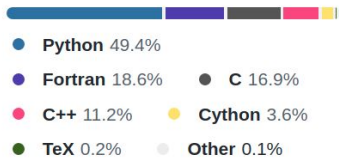
Try handling numpy masked arrays in reguide-check. This is supposed to fix the issue seen at #14748 (comment), where the crux -- I believe -- is that

Студенты участвуют (проектная группа).  
Добро пожаловать!

# Open Source проекты

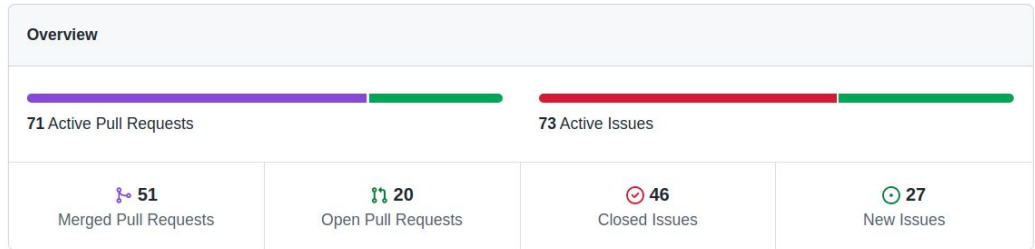


## Languages

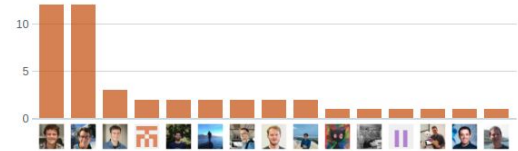


August 28, 2021 – September 28, 2021

Period: 1 month



Excluding merges, **28 authors** have pushed **51 commits** to master and **51 commits** to all branches. On master, **142 files** have changed and there have been **5,325 additions** and **1,724 deletions**.



51 Pull requests merged by 28 people

- BUG: Ensure that stats.linregress and mstats.linregress properly handle input of data with identical x values**  
#14757 merged 2 days ago
- DOC:special: Fix broken links to iburkardt**