

# Reproducibility **PI Manifesto**

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# 1

## I will teach my graduate students about reproducibility

a.

Lab notebook

b.

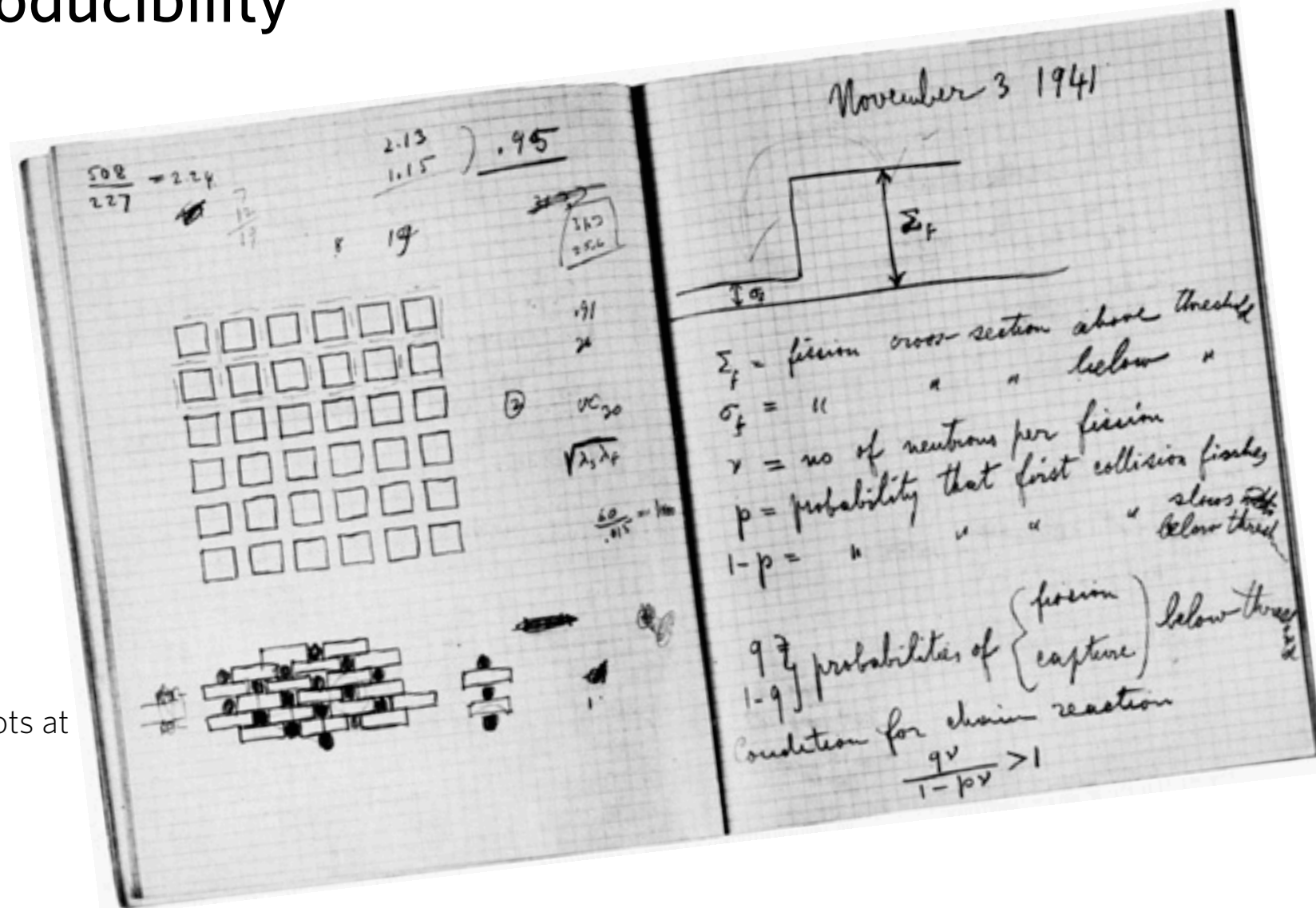
version control

c.

workflow

d.

publication-quality plots at group meetings



# 2

All our research code (and writing) *is* under version control.

**a.**

Local svn repo for prototypes on Python/Matlab/CUDA C and for LaTeX documents (reports, manuscripts, et al.)

**b.**

Google code for released research codes

**c.**

Bitbucket or Github for collaborative projects



# 3

## We will always carry out verification and validation

### **V&V reports are posted to figshare**

*Example:*

Validation of the culBM code for Navier-Stokes equations with immersed boundary methods. Anush Krishnan, Lorena A. Barba. [figshare](#).

Retrieved 18:16, Dec 12, 2012 (GMT)

<http://dx.doi.org/10.6084/m9.figshare.92789>



# 3

We will always carry out verification and validation

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## *Validation of the cuIBM code for Navier-Stokes equations with immersed boundary methods <sup>1</sup>*

*Anush Krishnan, Lorena A. Barba*

*6 July 2012*

We have developed a Navier-Stokes solver, called cuIBM, to simulate incompressible flows using immersed boundary methods. This document provides background on the numerical methods implemented in the cuIBM code framework and evidence of the validation exercise carried out by the authors. The code provides a growing set of options for flows with immersed boundaries, is written in C++ and uses GPU

623  
views

7  
shares

Published on 06 Jul 2012 - 13:11 (GMT)

Filesize is 5.54 MB

### Categories

- [Mechanical Engineering](#)
- [Computational Physics](#)

### Authors

Anush Krishnan

[Lorena A. Barba](#)

# 4

For main results in a paper, we will share data, plotting script & figure under CC-BY

## Posted to figshare

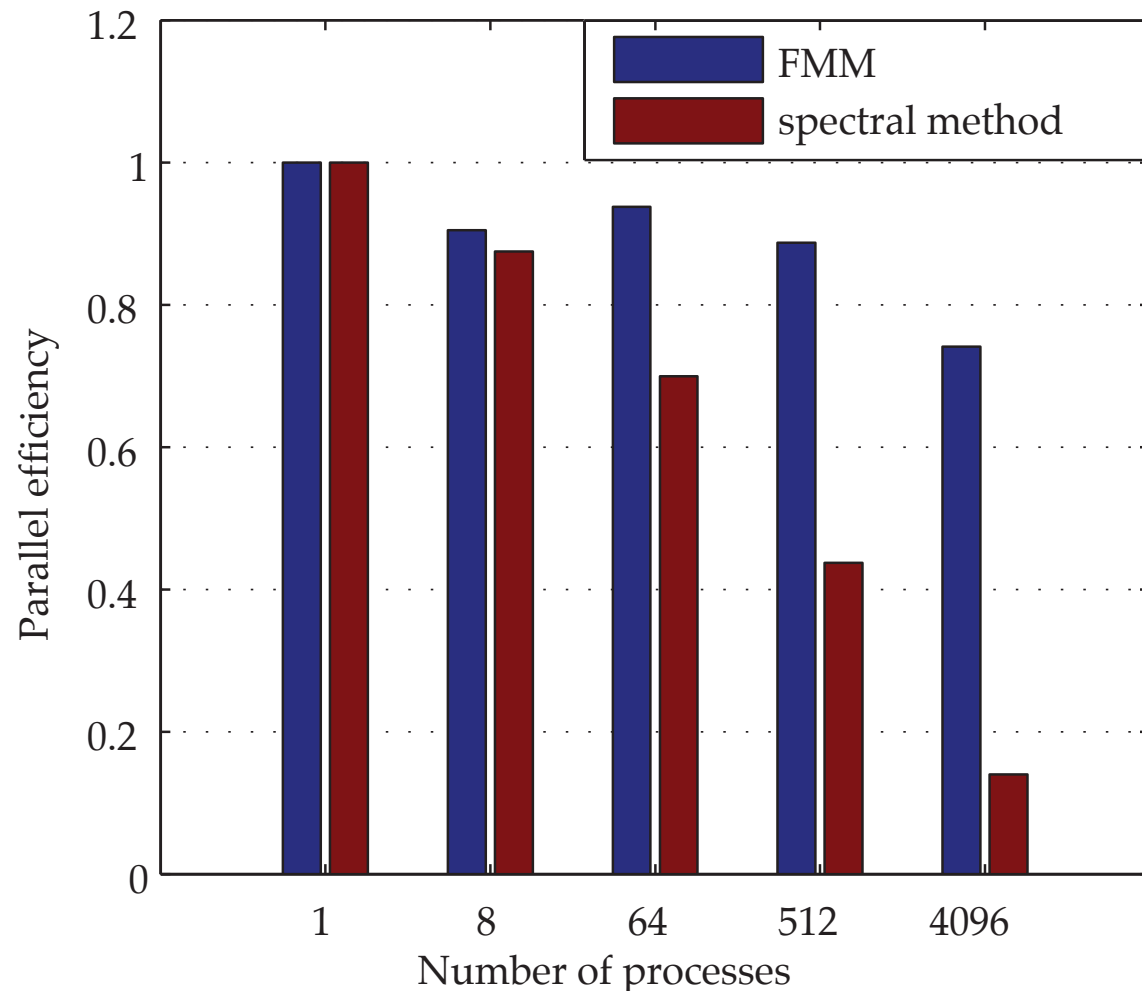
Get a DOI and use in the paper under CC-BY, with citation.

### Example:

Weak scaling of parallel FMM vs. FFT up to 4096 processes. Lorena A. Barba, Rio Yokota. figshare.

Retrieved 18:23, Dec 12, 2012 (GMT)


<http://dx.doi.org/10.6084/m9.figshare.92425>




# 4

For main results in a paper, we will share data, plotting script & figure under CC-BY

## Weak scaling of parallel FMM vs. FFT up to 4096 processes

 weakGPU.pdf

[preview](#) | [download](#)

 1003.zip

[preview](#) | [download](#)

 readTimes1003.m

[preview](#) | [download](#)

**1214**  
views

**64**  
shares

Published on 18 Jun 2012 - 22:37 (G)

Filesize in total is 374.29 KB

# 5

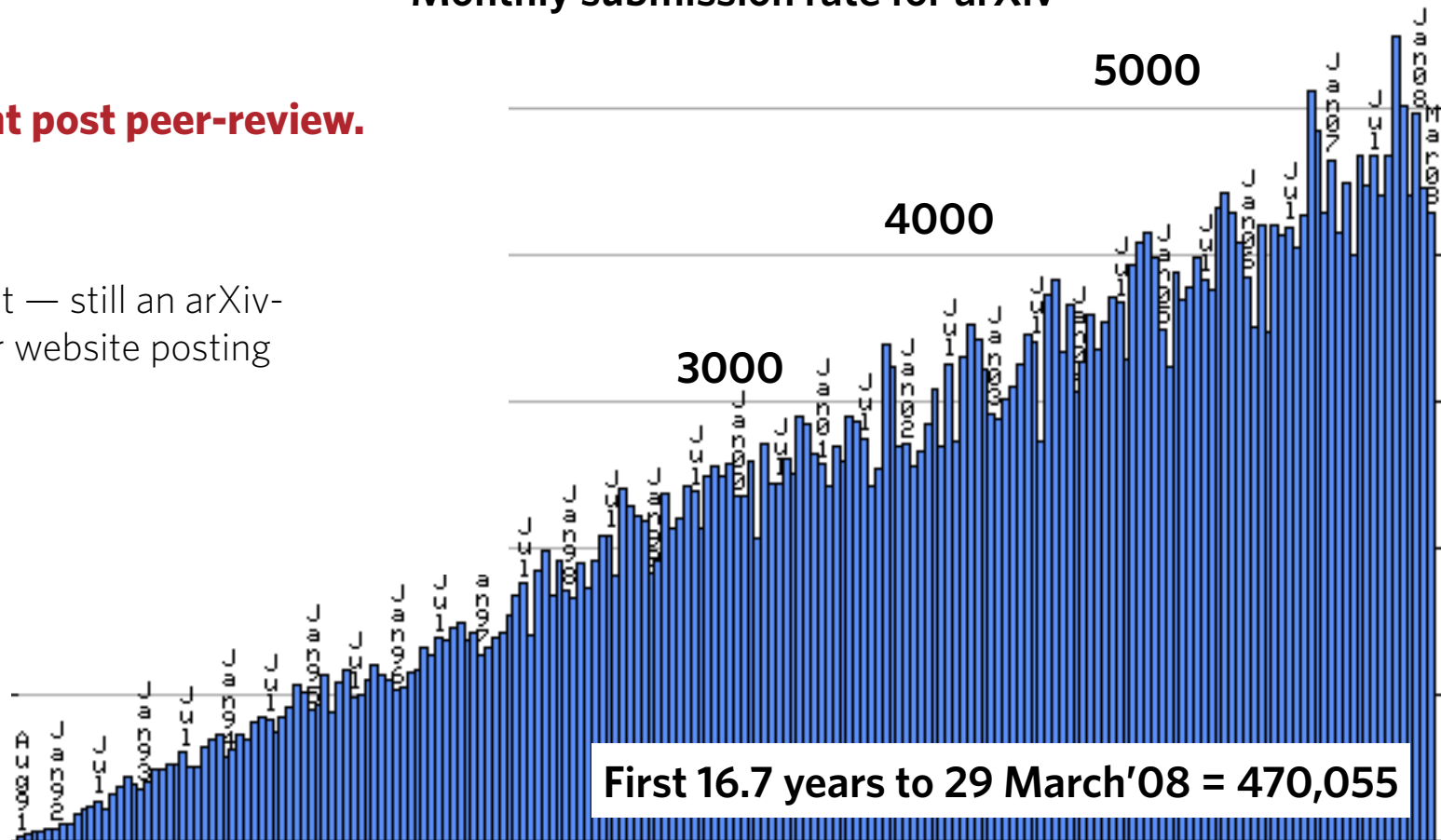
We will upload the preprint to arXiv at the time of submission of a paper.

... & update the preprint post peer-review.

## Caveat

Collaboration with biologist — still an arXiv-unfriendly field (but author website posting allowed in this case)

Monthly submission rate for arXiv





# 6

We will release code at the time of submission of a paper.

**under MIT license**

As preparatory measure: I will declare this intention in grant proposals.

**I have endorsed the Science Code Manifesto.**

<http://sciencecodemanifesto.org>

# Science Code Manifesto

# 7

We will add a “Reproducibility” declaration at the end of each paper.

## *4.6. Reproducibility and open-source policy*

The authors of the exaFMM code have a consistent policy of making science codes available openly, in the interest of reproducibility. The entire code that was used to obtain the present results is available from <https://bitbucket.org/exafmm/exafmm>. The revision number used for the results presented in this paper is 191 for the large-scale tests up to 4096 GPUs. Documentation and links to other publications are found in the project homepage at <http://exafmm.org/>. Figure 11, its plotting script and datasets are available online and usage is licensed under CC-BY-3.0 [24].

We acknowledge the use of the hit3D pseudo-spectral DNS code for isotropic turbulence, and appreciate greatly their authors for their open-source policy; the code is available via Google code at <http://code.google.com/p/hit3d/>.

# 8

I will keep an up-to-date web presence

Corollary

**I will develop a consistent open science policy**

Why do so many scientists have a terrible (or no) website?



@LorenaABarba

Please visit us at:

**<http://barbagroup.bu.edu>**

# Three themes

- 1. New publication models**
- 2. Workflow standards**
- 3. Social dynamic**