

Interactive Web Apps for Visualizations in Mathematics and Engineering

Francesca Taddei¹, Benjamin R uth², Christian Karpfinger³, Gerhard M ller¹

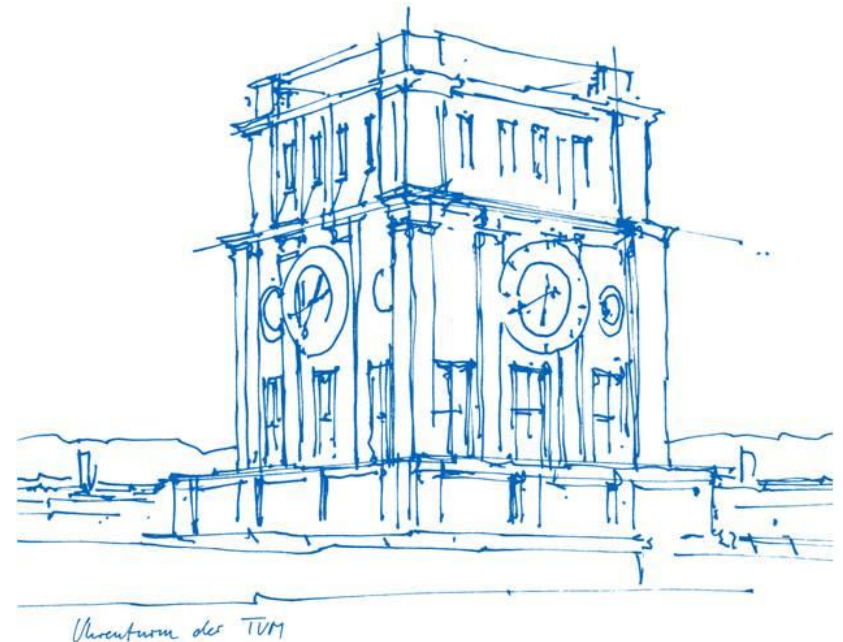
Technical University of Munich

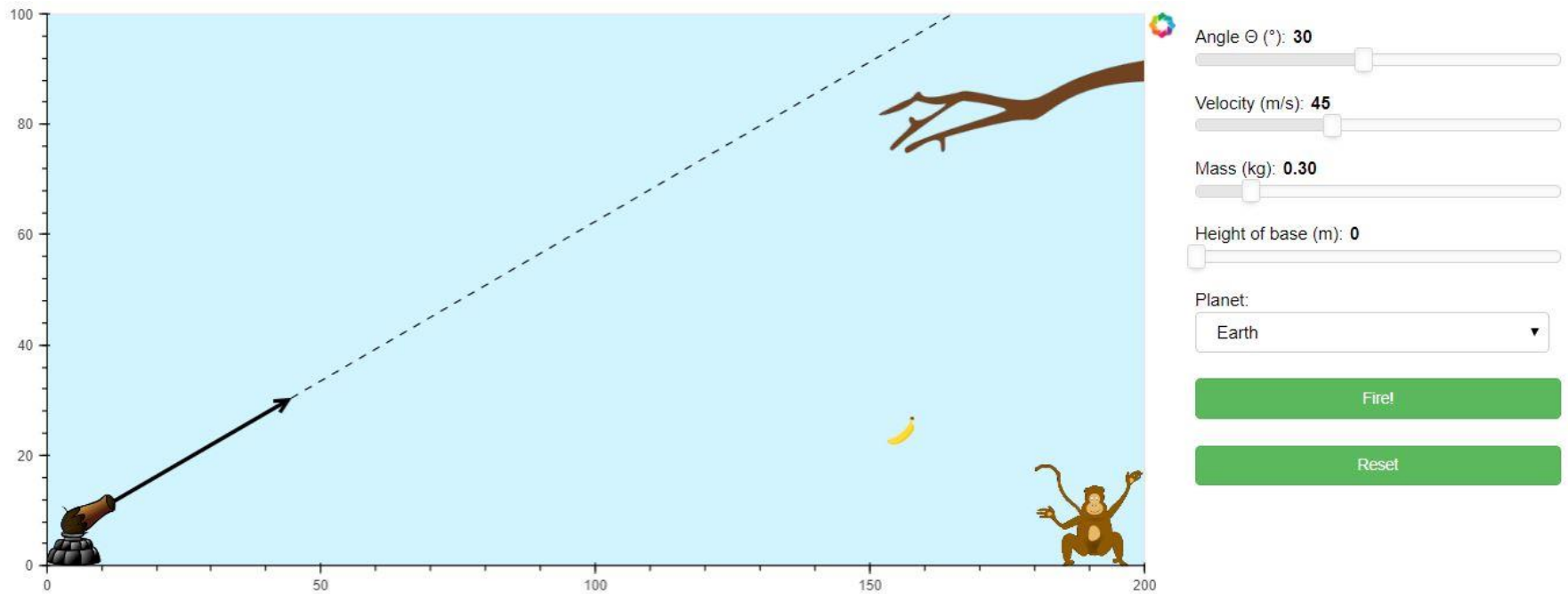
¹Chair of Structural Mechanics

²Department of Informatics

³Research Group Algebra

Munich, March 21st 2018





Bokeh



Examples of Bokeh

AN INTERACTIVE EXPLORER FOR IMDB DATA

Interact with the widgets on the left to query a subset of movies to plot. Hover over the circles to see more information about each movie.

Inspired by the [Shiny Movie Explorer](#).

Information courtesy of IMDb
 (<http://www.imdb.com>).
 Used with permission.

Minimum number of reviews: **80**

Dollars at Box Office (millions): **0**

Genre
 All

Year released: **1970**

End Year released: **2014**

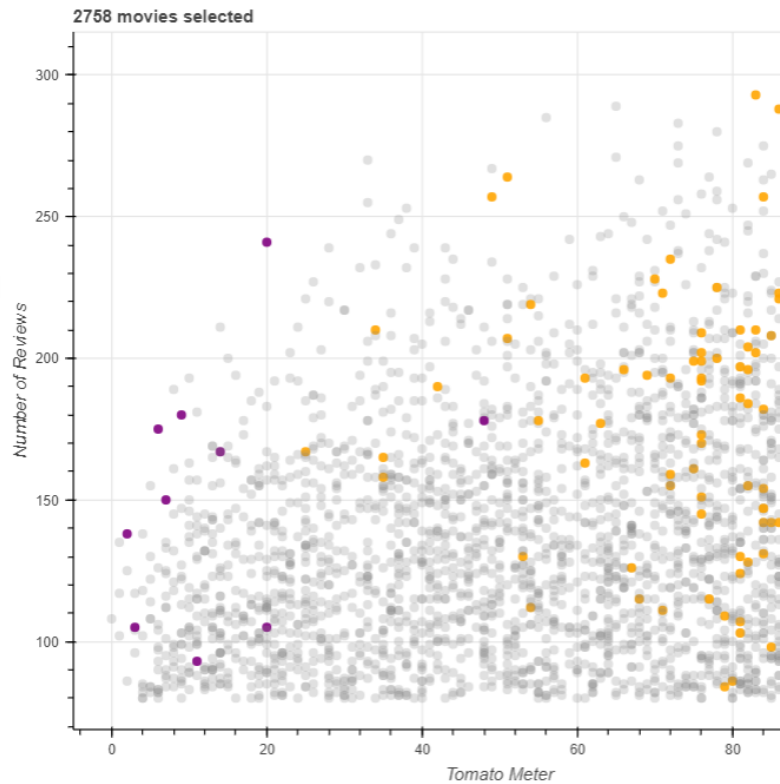
Minimum number of Oscar wins: **0**

Director name contains

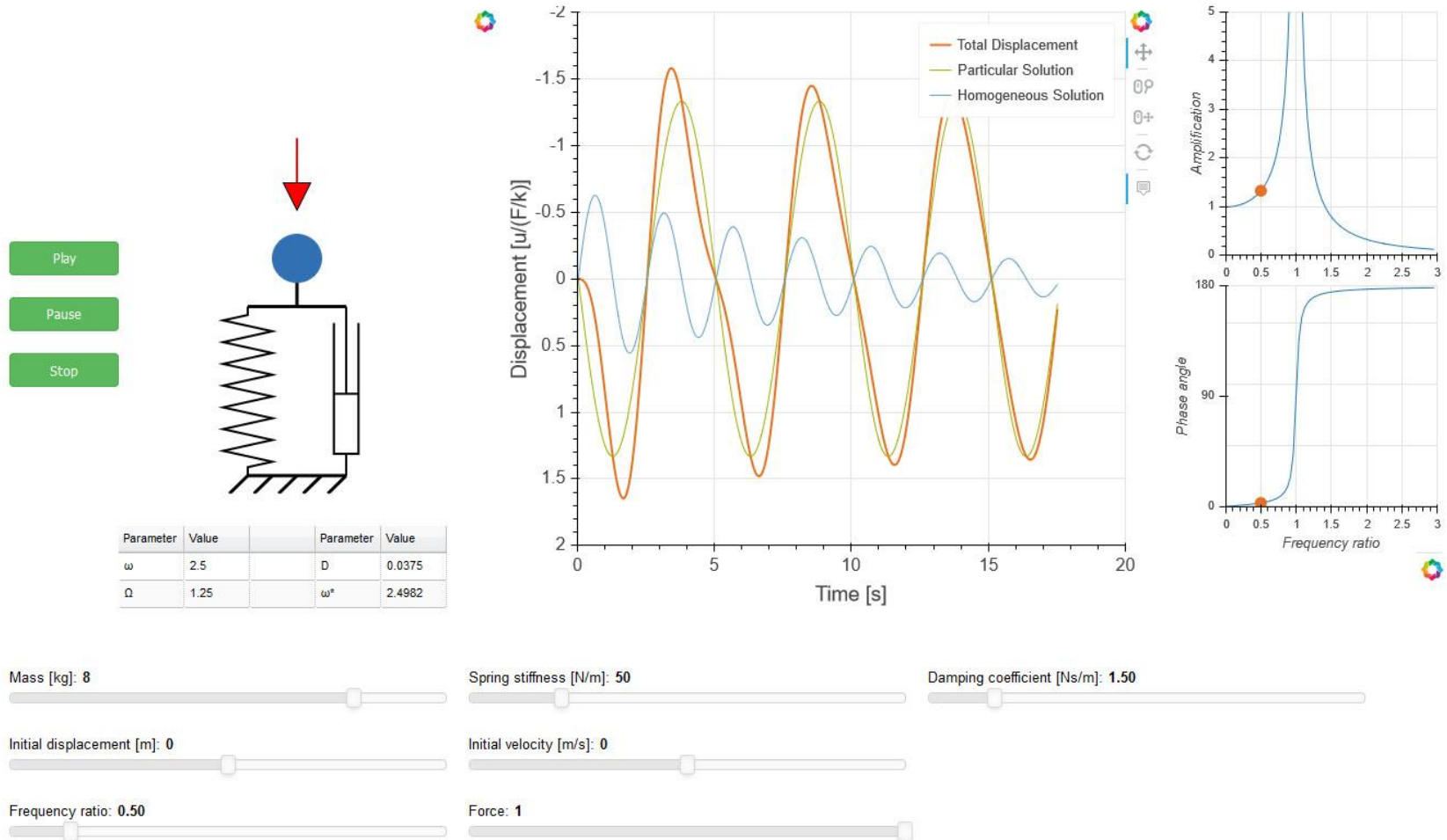
Cast names contains

X Axis
 Tomato Meter

Y Axis
 Number of Reviews



SDOF system – forced vibration



Conservation of momentum

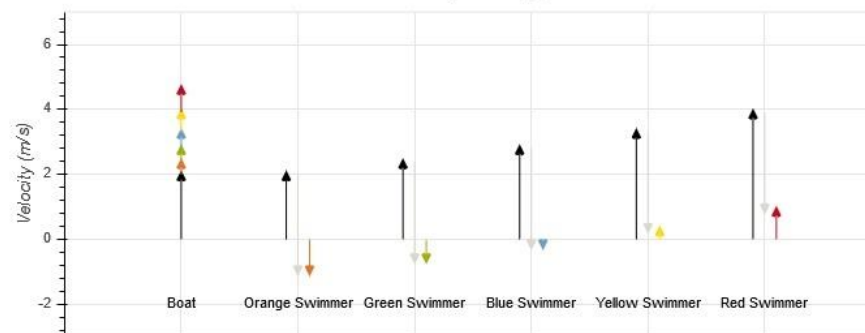
Water Scene with the Boat and its Swimmers



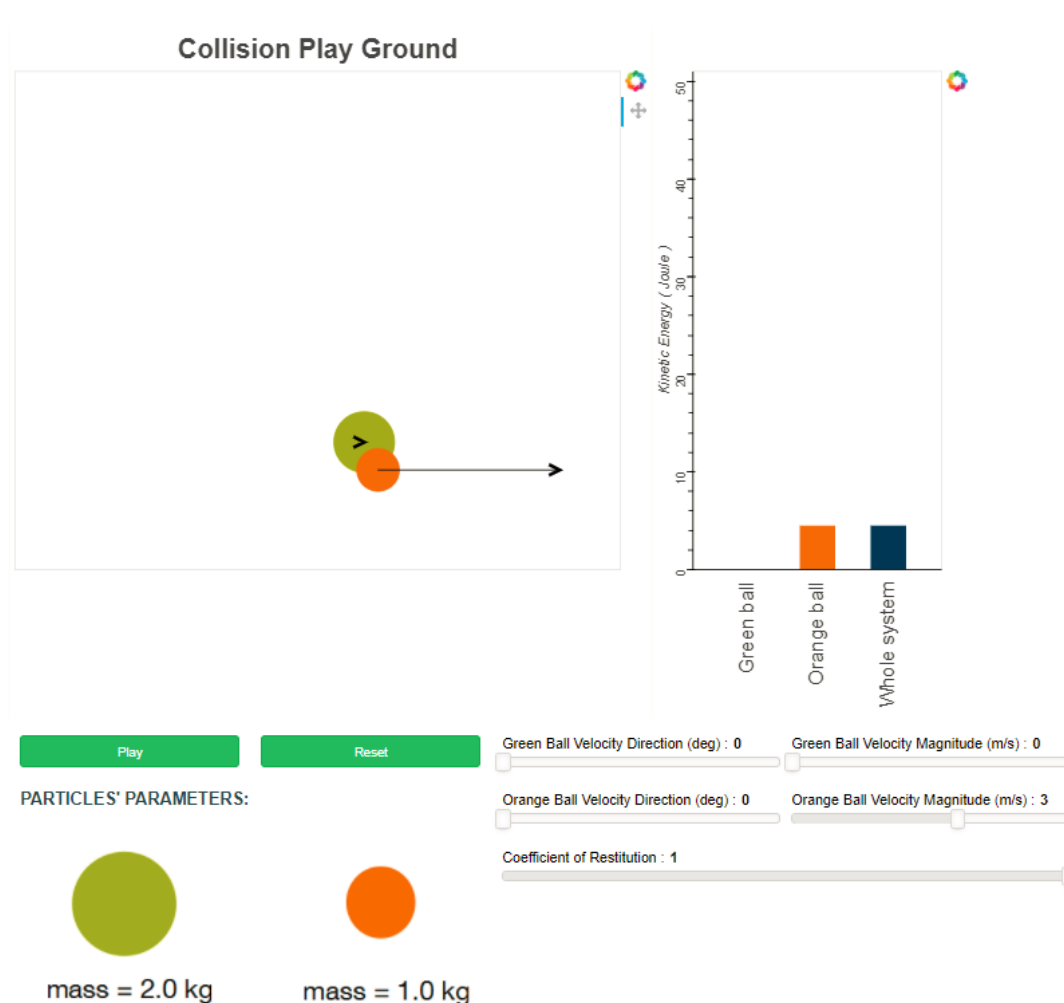
Number of swimmers on board : 5



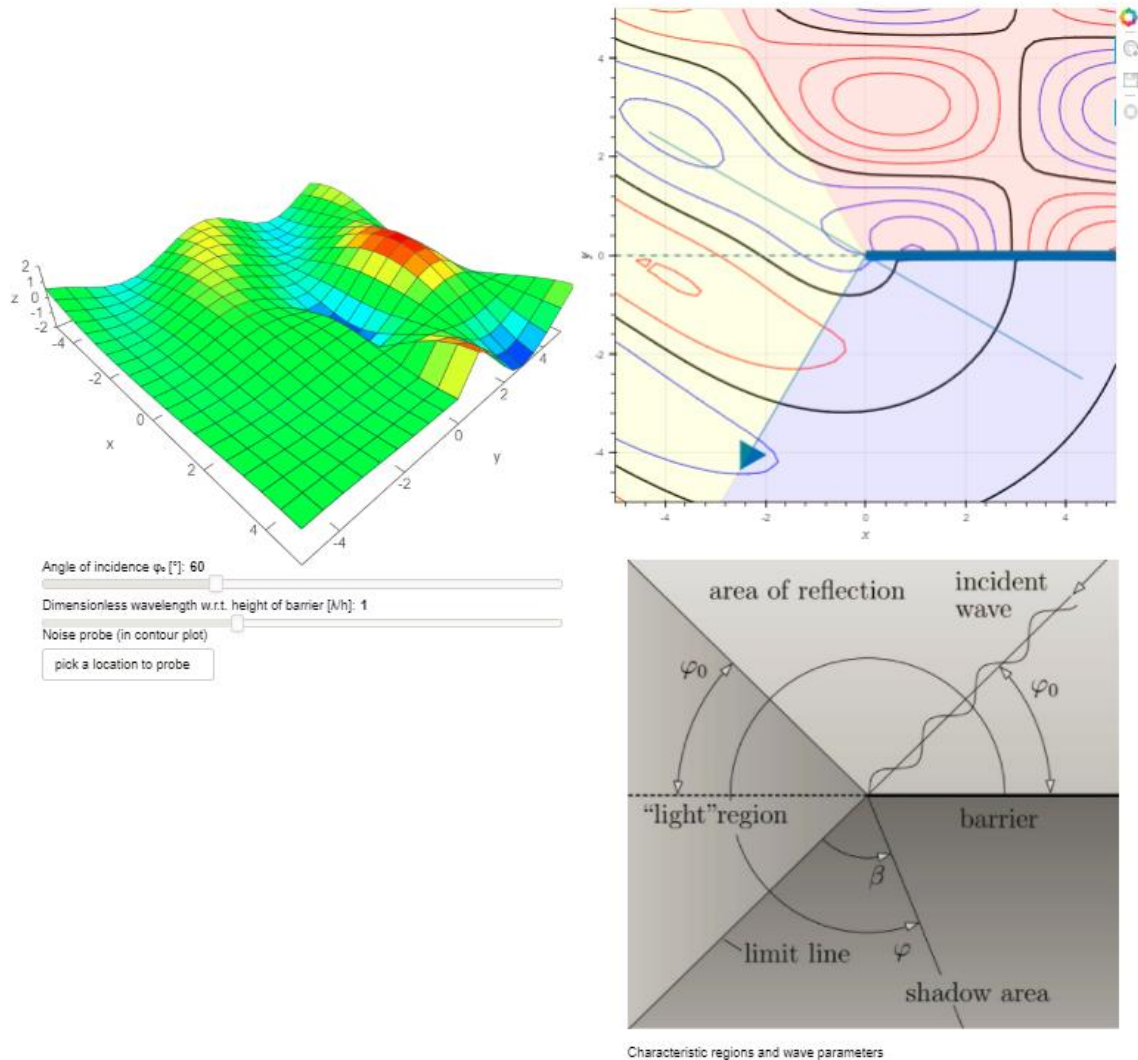
Velocity Diagram



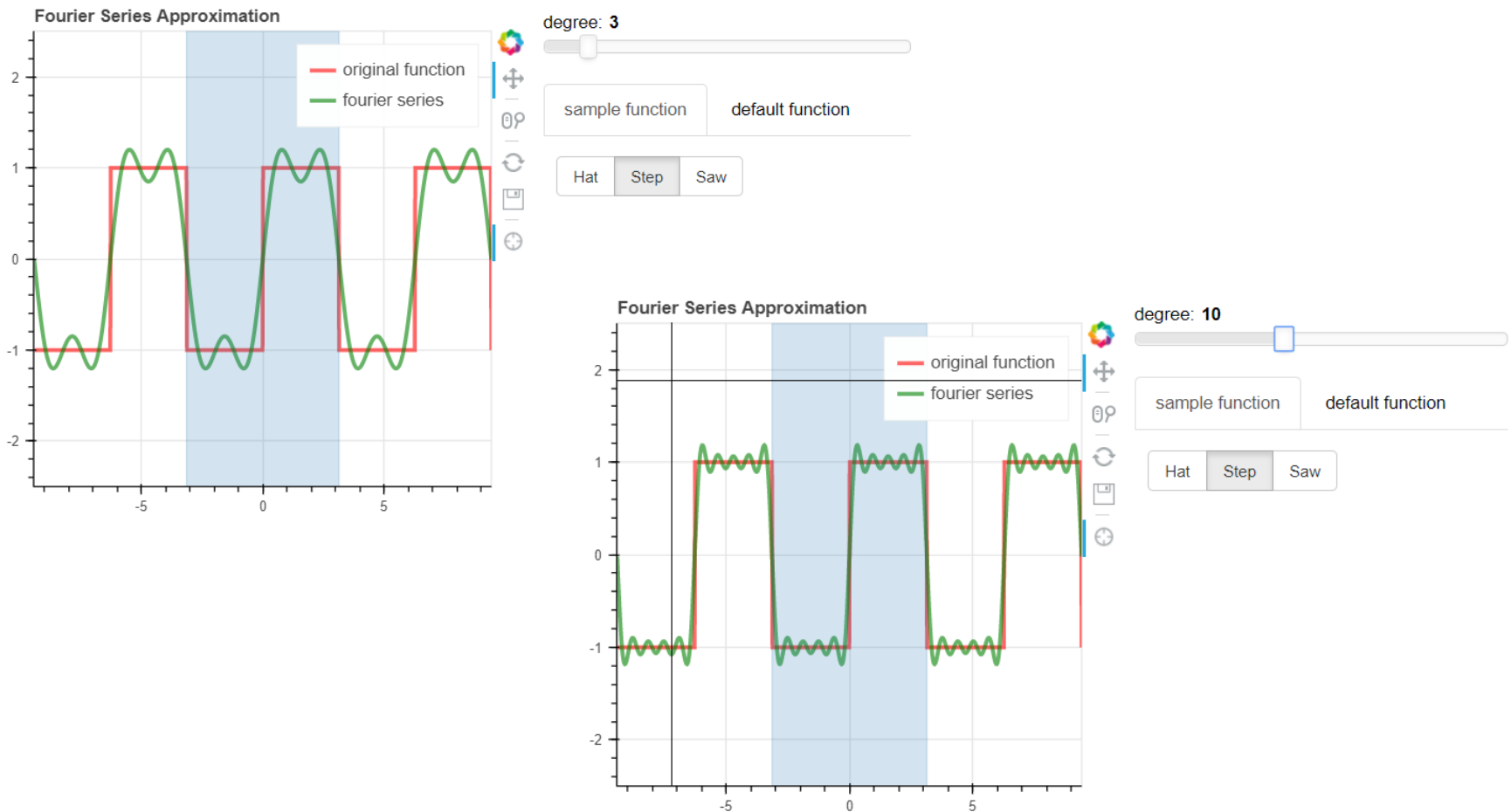
Extended java features: drag and drop



Extended java features: 3d visualization



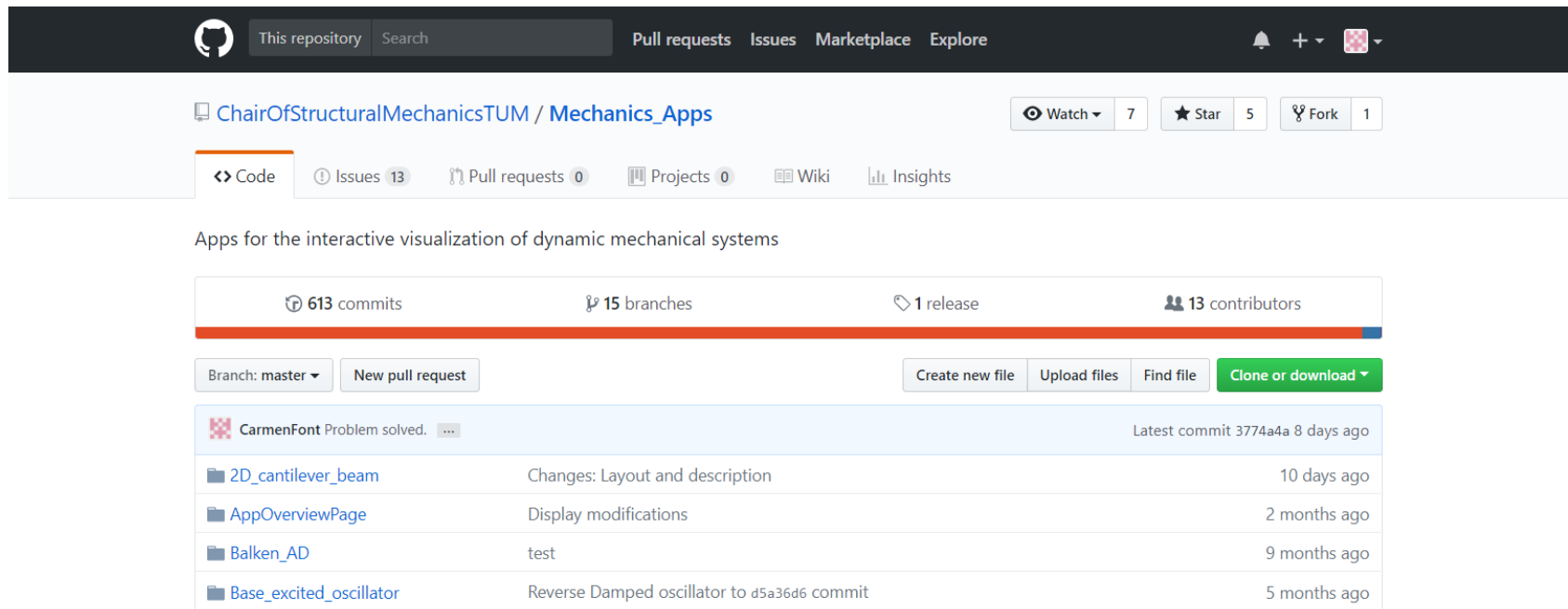
Fourier series approximation



GitHub

Repository in GitHub

- Free access to the all the application's codes
- Possible for many people to work at the same time
- Track the code history and changes. Previous versions of the code are stored in GitHub



The screenshot shows the GitHub interface for the repository `ChairOfStructuralMechanicsTUM / Mechanics_Apps`. The repository has 7 watchers, 5 stars, and 1 fork. It contains 613 commits, 15 branches, 1 release, and 13 contributors. The current branch is `master`. The commit history is as follows:

Commit Message	Description	Time Ago
<code>CarmenFont</code> Problem solved. ...		Latest commit 3774a4a 8 days ago
<code>2D_cantilever_beam</code>	Changes: Layout and description	10 days ago
<code>AppOverviewPage</code>	Display modifications	2 months ago
<code>Balken_AD</code>	test	9 months ago
<code>Base_excited_oscillator</code>	Reverse Damped oscillator to d5a36d6 commit	5 months ago

How to access the applications?

*Research Group Algebra
Department of Mathematics*

<https://www-m11.ma.tum.de/en/karpfing/buecher/videoanimationen-interaktive-apps/>



*Chair of Structural Mechanics
Department of Civil, Geo and Environmental
Engineering*

<https://www.bm.bgu.tum.de/lehre/interactive-apps/>



Questions?

Thank you for your attention!