

DARA 21-cm Signal Simulation

Overview

A simple semi-numerical 21-cm signal simulation in a Jupyter notebook created by Thomas Gessey-Jones for the 2023 DARA Global 21-cm Astronomy Workshop

Installation/Access Methods

Option 1



The simplest way to get your a copy of the workbook is to click the above *Open in Colab* link or the one at the top of the workbook (.ipynb file).

Option 2

You can also manually navigate to the link

https://colab.research.google.com/github/ThomasGesseyJones/DARA_21cm_Signal_Simulation/blob/main/DARA_21cm_Signal_Simulation.ipynb

Option 3

Open Google Colab, and when presented with the workbook selection pop-up window pick the GitHub tab. Then type into the search box *ThomasGesseyJones/DARA* it should automatically find the workbook and list it underneath 'Path'. Simply click on the workbook name and it will open a copy of the workbook.

Option Avoiding Google Colab

Note for the DARA workshop it is recommended you use Google Colab since that way we don't have to worry about hardware requirements or any potential OS/version incompatibilities.

If you do not wish to use Google Colab, the workbook can be directly downloaded from this repository using `git clone` or as a zip file by selecting the latest release. The `.ipynb` notebook file can then be opened in an interactive Jupyter notebook environment of your choice.

For more information on how to get *Jupyter* running on your machine see <https://jupyter.org/>

Acknowledgments

I would like to thank the organizers of the [2023 DARA Global 21-cm Astronomy Workshop](#) for giving me the opportunity to present, and finally giving me the motivation to make this workbook, something I have wanted to do for some time.

The structure of this code is inspired by the private 21-cm signal simulation code developed over many years by [Anastasia Fialkov](#), [Rennan Barkana](#), [Itamar Reis](#) and others who have my sincerest thanks for giving me access to said code and teaching me how to use and extend it. Several of the equations that are used have been modified from the original [21-cm FAST paper](#), which remains an excellent more technical introduction to 21-cm signal simulations.

Finally, I would like to thank [Christian Kirkham](#) for his testing of this workbook and his invaluable feedback.

Contact

If you have any feedback on the workbook or would like to contribute to it feel free to contact me at tg400@cam.ac.uk or open an issue or pull request on the [GitHub repository](#).