CODECHECK certificate 2024-022 for "Simulating room transfer functions between transducers mounted on audio devices using a modified image source method"

Item	Value
Title	Simulating room transfer functions between transducers mounted on audio devices using a modified image source method
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Ref. paper	https://doi.org/10.1121/10.0023935
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Date of Check	2024-12-05
Summary	Full reproduction
Repository	https://github.com/codecheckers/DEISM
Ref. certificate	http://doi.org/10.5281/zenodo.14273316

Table 1: CODECHECK summary

Output	Comment
Examples/outputs/figures/[...]	
JASA_figure8_SPL.png	Figure 8 (top) in JASA paper
JASA_figure8_SPL.png	Figure 8 (bottom) in JASA paper
JASA_figure9_SPL.png	Figure 9 (top) in JASA paper
JASA_figure9_phase.png	Figure 9 (bottom) in JASA paper

Table 2: Summary of output files generated

Summary

After running two Python scripts (deism_JASA_fig8.py and deism_JASA_fig9.py in the examples folder) in a public GitHub repository, figures 8 and 9 were successfully reproduced (they seem to be identical to the paper at first glance). The repository did not provide code to reproduce other plots (Figs. 7, 10 and 11). Other figures (Figs 1-6) seem to only help illustrate the main body of the paper and are therefore not applicable for reproduction with the code.

CODECHECKER notes

- It would be great if the author could include some info on the structure of the repository and include that to recreate the figures of the papers, what specific python files need to be ran.
- If you run the code `python deism_arg_singleparam_example.py` you need to close the figure to get the code to continue running. Perhaps indicate this in the ReadMe as well.
- The ReadMe states: 'Run scripts in the **test** folder'. Do you mean the **examples** folder?
- For windows the pip install seems to work right out of the box, but not for Mac (see Appendix A). Perhaps there could be different instructions for Windows (pip) and Mac (conda) "

Installation prerequisites and computational environment

Easy to install. All instructions are in the ReadMe file.

Data preparation

No need for data preparation; everything was already defined in the Python files.

Running the code

Generally good.

Some problems with the axis text in Latex notation, if it is not able to find the right "tool" it gives an error As this happens after the simulation (which could possibly last 30 minutes), this could be frustrating. Maybe if it could check it before, could be better.

It could be useful to indicate the time it takes to run each simulation. Some take more than 10 minutes so it might be good to print this or indicate this in the ReadMe. Better yet would be to print a progress-bar.

Outputs

Figure 8 (top) generated by CodeCHECKER:

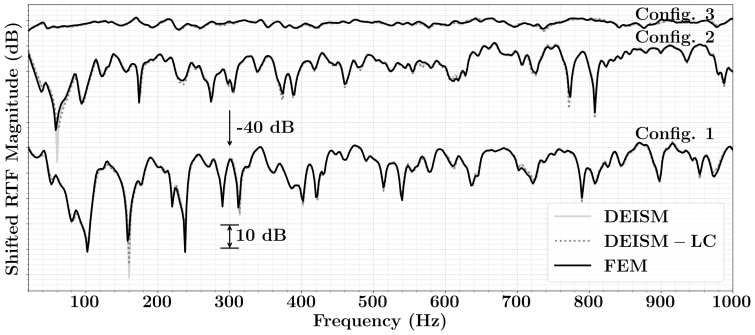


Figure 8 (bottom) generated by CodeCHECKER:

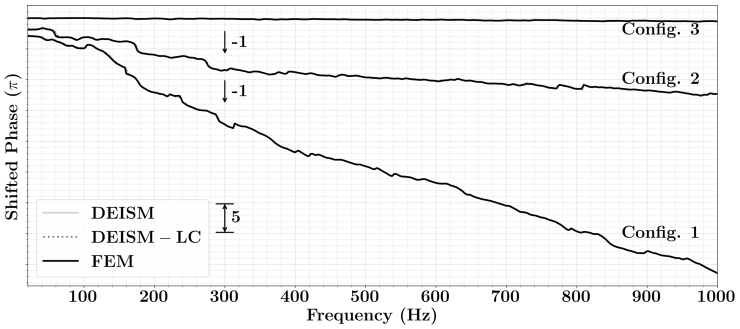


Figure 9 (top) generated by CodeCHECKER:

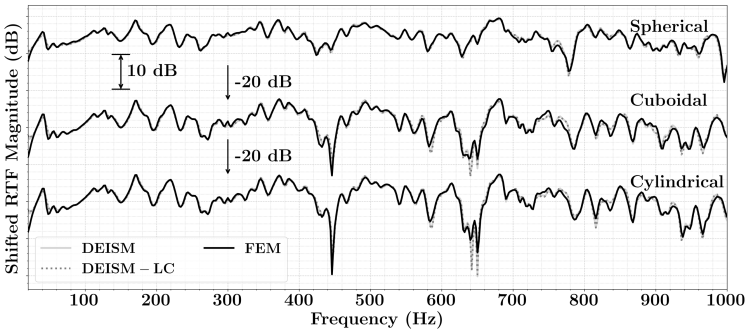
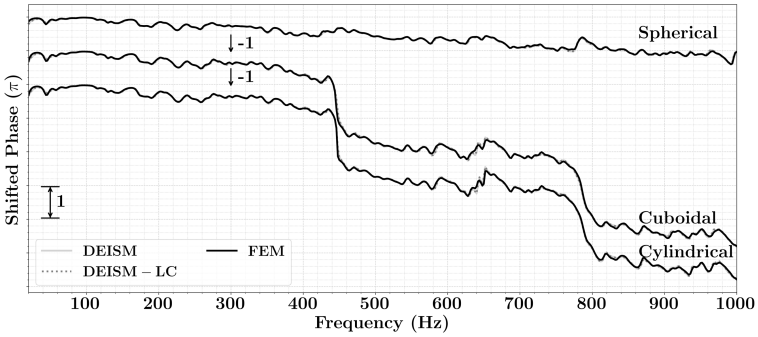


Figure 9 (bottom) generated by CodeCHECKER:



Citing this document

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Appendix A: error on Mac

'pip install deism' gives the following error:

```
× Getting requirements to build wheel did not run successfully.
  │ exit code: 1
  ╰─> [40 lines of output]
      Package hdf5 was not found in the pkg-config search path.
      Perhaps you should add the directory containing `hdf5.pc'
      to the PKG_CONFIG_PATH environment variable
      No package 'hdf5' found
      reading from setup.cfg...
          HDF5_DIR environment variable not set, checking some standard locations ..
      checking /Users/SilvinW/opt/anaconda3/include...
      hdf5 headers not found in /Users/SilvinW/opt/anaconda3/include
      checking /Users/SilvinW/opt/anaconda3/Library/include...
      hdf5 headers not found in /Users/SilvinW/opt/anaconda3/Library/include
      checking /Users/SilvinW/include...
      hdf5 headers not found in /Users/SilvinW/include
      checking /usr/local/include...
      hdf5 headers not found in /usr/local/include
      checking /sw/include...
      hdf5 headers not found in /sw/include
      checking /opt/include...
      hdf5 headers not found in /opt/include
      checking /opt/local/include...
      hdf5 headers not found in /opt/local/include
      checking /opt/homebrew/include...
      hdf5 headers not found in /opt/homebrew/include
      checking /usr/include...
      hdf5 headers not found in /usr/include
      Traceback (most recent call last):
        File "/Users/SilvinW/opt/anaconda3/lib/python3.9/site-
packages/pip/_vendor/pep517/in_process/_in_process.py", line 351, in <module>
          main()
        File "/Users/SilvinW/opt/anaconda3/lib/python3.9/site-
packages/pip/_vendor/pep517/in_process/_in_process.py", line 333, in main
          json_out['return_val'] = hook(**hook_input['kwargs'])
        File "/Users/SilvinW/opt/anaconda3/lib/python3.9/site-
packages/pip/_vendor/pep517/in_process/_in_process.py", line 118, in
get_requires_for_build_wheel
          return hook(config_settings)
        File "/private/var/folders/yt/t2mpnvp179n27lg5l1dsf7q40000gn/T/pip-build-env-
6lkpb0nr/overlay/lib/python3.9/site-packages/setuptools/build_meta.py", line 333, in
get_requires_for_build_wheel
          return self._get_build_requires(config_settings, requirements=[])
        File "/private/var/folders/yt/t2mpnvp179n27lg5l1dsf7q40000gn/T/pip-build-env-
6lkpb0nr/overlay/lib/python3.9/site-packages/setuptools/build_meta.py", line 303, in
_get_build_requires
          self.run_setup()
        File "/private/var/folders/yt/t2mpnvp179n27lg5l1dsf7q40000gn/T/pip-build-env-
6lkpb0nr/overlay/lib/python3.9/site-packages/setuptools/build_meta.py", line 319, in run_setup
          exec(code, locals())
        File "<string>", line 277, in <module>
        File "<string>", line 226, in _populate_hdf5_info
      ValueError: did not find HDF5 headers
      [end of output]

  note: This error originates from a subprocess, and is likely not a problem with pip.
error: subprocess-exited-with-error

× Getting requirements to build wheel did not run successfully.
│ exit code: 1
╰─> See above for output.
```

note: This error originates from a subprocess, and is likely not a problem with pip.