



AN INTRODUCTION TO WFSCOLLIDER

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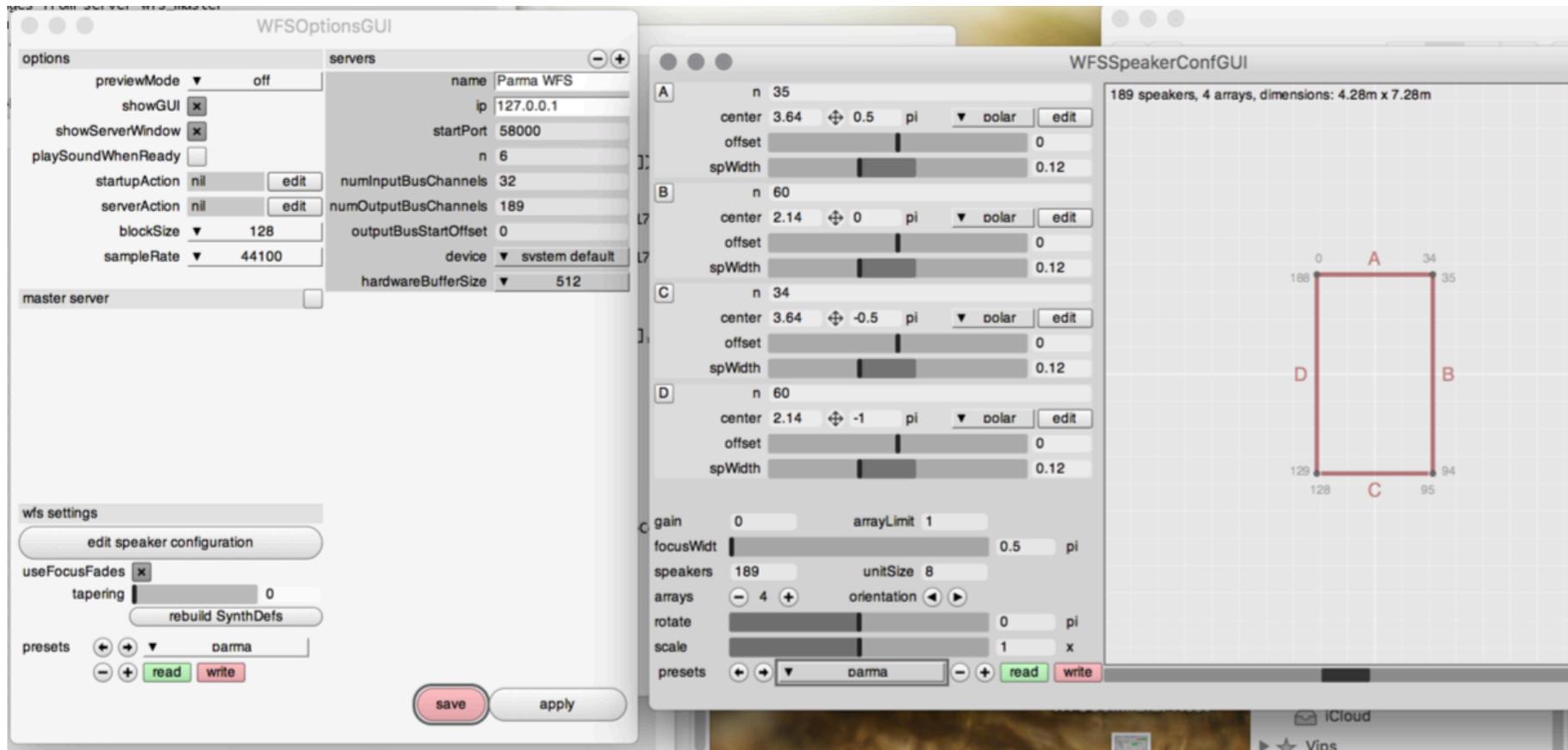
Installing WFSCollider

- Mac with at least OSX 10.6 and an intel processor.
- For running on Linux and older versions of OSX you will need to install the libraries separately on an existing SuperCollider install. Most probably it does not run on Windows.
- To install with “Parma” preset download from:
https://sourceforge.net/projects/wfscollider/files/beta/WFSCollider_2.2.5b1.zip/download
- The download only includes the app, for the manual, examples etc. you need to download the regular version as well:
<https://sourceforge.net/projects/wfscollider/files/WFSCollider%202.2.4.dmg/download>

Installing (continue)

- To run it on your system, the following steps need to be taken after the app is installed and started (starting it may require you to open the app with the ctrl key down and choose 'open' from the contextual menu, to bypass the macOS AppStore lock as the app is not code-signed):
 - - go to menu WFS Collider -> Preferences...
 - - there, in the 'WFSOptionsGUI' window (it's the same "window preferences" indeed 😞) that pops up, choose 'parma' from the 'presets' section at the bottom of the page
 - - after that, in the 'servers' section you will see the server set named 'Parma WFS'. It should be set to the correct settings, except from the soundcard name. In the 'device' section choose the name of your RME sound interface (it should appear in the list) instead of 'system default'
 - - click on the 'edit speaker configuration' button
 - - in the new window that appears also choose the 'parma' preset at the bottom of the page
 - - close the speaker configuration window again
 - - hit the 'apply' button and also the 'save' button in the WFSOptionsGUI.
- Put always the app in your applications folder.

What the windows should look like:



Simple test

- The audio servers will now boot up, which usually takes a while. Wait until you see all 6 labels (wfs1_1, wfs1_2 etc.) in the WFSServers window at the left bottom corner of the screen light up green. Now you should be good to go.
- To do a simple test, choose Score -> New and hit the '+' button in at window. This will create a default event with a sound sample at a random position. Perhaps be careful with the master volume at first, the big slider at the right side of the screen shows the level in dB. I would suggest to start at around -30 and then slowly pull it up until the sound is at the desired level. If that is really far away from 0dB on the slider, you can make a global level correction in (WFSCollider/Preferences....) the 'edit speaker configuration' window; just set the gain (dB) that needs to be added or removed on the 'gain' parameter (see the next image). This will become active with the next event that is played. And hit 'save' again in the WFSOptionsGUI to save the setting.

Set a new global gain value:

The screenshot displays a software interface for configuring a speaker array. The left panel contains settings for four arrays (A, B, C, D) and global parameters. The right panel shows a 2D layout of the speaker array with dimensions 9.00m x 11.00m and 192 speakers.

Array Settings:

- A:** n 40, center 5.5, offset 0, spWidth 0.164, polar
- B:** n 56, center 4.5, offset 0, spWidth 0.164, polar
- C:** n 40, center 5.5, offset 0, spWidth 0.164, polar
- D:** n 56, center 4.5, offset 0, spWidth 0.164, polar

Global Parameters:

- gain: 0 (highlighted with a red circle and arrow)
- arrayLimit: 1
- focusWidth: 0.5
- speakers: 192
- unitSize: 8
- arrays: 4
- orientation: (left/right arrows)
- rotate: 0
- scale: 1
- presets: rect
- Buttons: read, write

Speaker Array Layout:

192 speakers, 4 arrays, dimensions: 9.00m x 11.00m

The layout shows four arrays (A, B, C, D) arranged in a rectangular pattern. Array A is at the top, B at the right, C at the bottom, and D at the left. Speaker indices are shown at the corners: 0 (top-left), 39 (top-right), 136 (bottom-left), and 95 (bottom-right). The dimensions of the array are 9.00m x 11.00m.

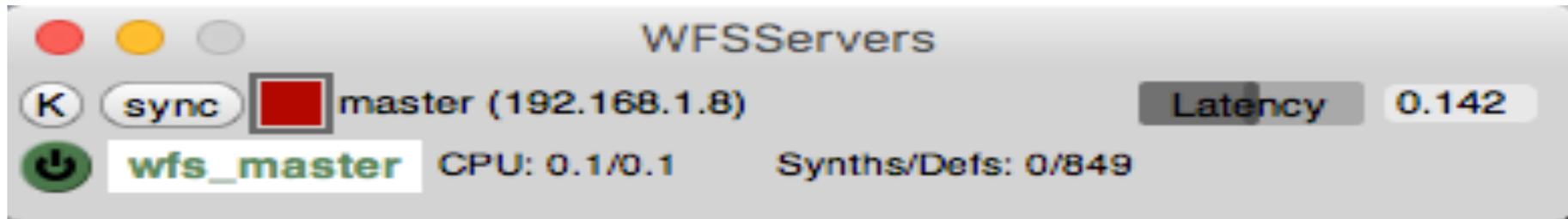
Normal install

- Go to the website of The Game of Life: www.gameoflife.nl
In the menu, click on About > Working with our system.
Under Software downloads you will find the link (currently: <http://sourceforge.net/projects/wfscollider/files/>).
- OSX 10.8 and 10.9 users: put always the app in your applications folder. The first time you will open the application click on the app icon with the ctrl key pressed (or with the second mouse button), and choose “open” from the contextual menu that appears. This also results in a warning, but this time you can choose “ok” to open the app anyway
- For other installations or to use it with SC see the manual “Working with WFSCollider” by Arthur Sauer and Wouter Snoei.

Opening WFSCollider

- Double-click on WFSCollider.app.
- In the post window you should see several messages that indicates SR, audio card and other info (the output depend on the audio interfaces you have connected to your computer, and the setup in AudioMidiSetup).
- To check your settings in 'Audio Midi Setup', open 'Audio Midi Setup' in the folder /Applications/Utilities/, and have a look in the Audio Devices window.
- In WFSCollider you see a window called WFSServers. In the bottom left you should see a green button and next to it the text wfs_master. If so, you are now ready to work with the program:

WFSServers window



Soundfiles can be of almost any format except for mp3 and FLAC. See here for a complete list: <http://www.mega-nerd.com/libsndfile/>

The sample rate of the system is 44.1KHz, so soundfiles with that sample rate will sound the best (although it will playback sound files of any sample rate correctly).

About WFSCollider

- WFSCollider: driving software of the WFS system of the Game Of Life Foundation (<http://www.gameoflife.nl>)
- With WFSCollider it is possible:
 - - To create sound sources on the system defining their location in the two dimensional field
 - - Sources can be moving in real-time along a trajectory or according to a function, sit steady in the room or be manipulated live
 - - The sound that plays on these sources can be basic sound files, but WFSCollider also offers numerous possibilities for processing and synthesizing sound.
 - - The sounds or sound processes can be placed on a timeline, and everything can be saved into project files.

About WFSCollider II

- It's Open Source!
- It's based on SuperCollider, an open source music-oriented programming language.
- It's not required to know SC.
- WFSCollider interface is fully graphical, but it is also fully scriptable via SuperCollider code.
- Apart from driving the Game Of Life system, WFSCollider can also be used to prepare your projects at home, or even to compose for headphone, stereo or quadraphonic setups using the same features and interface. This is what we call the "offline" mode, the default mode in which WFSCollider will startup.
- It is also possible to drive basically any WFS setup. It can be configured for many situations, simply via the preference panel. WFSCollider can drive both single array setups and full setups surrounding the audience. No SuperCollider coding skills are required.

Unit and WFS Libraries

- WFS Collider is based on the Unit Library (a SuperCollider library that enables timeline based editing and patching of processes -“Units”- in a graphical way). The library was developed together with the WFS Library, especially for this software project, but it is more generic; it can also be used separately without the WFS capabilities.
- Also, there is the VBAP library (currently part of the WFS Library). VBAP: Vector Base Amplitude Panning (VBAP) is a method for positioning virtual sources to arbitrary directions using a setup of multiple loudspeakers. In VBAP the number of loudspeakers can be arbitrary, and they can be positioned in an arbitrary 2-D or 3-D setups. VBAP produces virtual sources that are as sharp as is possible with current loudspeaker configuration and amplitude panning methods, since it uses at one time the minimum number of loudspeakers needed, one, two, or three.
- The VBAP library is used to drive multi-speaker setups via the VBAP technique. Just like the WFS Library, it uses the basic infrastructure, framework and GUI interface of the Unit Library.

Unit and WFS Libraries 2

- As a WFS Collider user it may be important to know about the distinction between these two libraries, even when you are not programming source code. In the graphic interface you will sometimes find names of objects that start with a capital 'U' (Uchain, UGlobalEQ, Udef etc..). This means that these objects belong to the Unit Library. Also, there are objects of which the name starts with 'WFS' (WFS Servers, WFS Path etc..). Those are specific to the WFS library.
- The reason to show these in the graphic interface is to maintain clarity about the exact names used in the programming language, so that scripting for the system blends in seamlessly with working in the GUI (graphical interface).
- This also goes for counting values; SuperCollider (as many programming languages) always starts counting at 0 (zero), not 1. Therefore most of the settings and values that are in whole numbers in the interface also start at zero (for example the number of an event in the score editor, or the index of a specific loudspeaker on the WFS system), even though most humans start counting at 1...

Basic elements in WFSCollider

- Basic objects and concepts:

- **Score (Uscore)**

A Score holds a timeline, along which Events can be placed. Playing a Score will start and stop these events at the right moment. The Score can be saved and read as a file (.uscore extension). The system can open and play multiple scores at the same time, and there are also ways to manipulate the timeline while playing. Scores have an analogy to what is sometimes called “arrangement” in other DAW software (DAW: Digital Audio Workstation).

- Note that Score pause in WFSCollider means something else than in most DAW software. When setting a Score to pause, only the timeline is paused. Any events that were already playing will keep playing. If you really want to stop all sound, use the stop button instead.

Basic elements in WFSCollider 2

- **Event (Uevent):**

Events are objects to be activated by a score. They can also be activated individually (via supercollider code, via OSC messages or via the 'power' button in the editor).

There are currently three types of events: Chains (UChain), Markers (UMarker) and ... Scores (UScore). Yes, the Score itself is also an Event, and it can be placed on the timeline of another score. In that case, we call it a Folder. Events have distinct colors in the editor, which are assigned automatically but can also be changed by the user.

Basic elements in WFSCollider 3

- **Chain (Uchain) 1:**

A Chain holds a series of Units (U). Together they form one processing chain, where usually a sound is generated, processed and sent to the outputs of the system. Via the editor the user can design the signal path and contents of the Chain. A Chain is a self-enclosed environment. Sounds and processes in a Chain cannot interfere with sounds in another Chain; multiple Chains operate in parallel to each other. If you want sound processes to interfere with each other, it all needs to happen within one Chain (more about this in the “Parallel architecture” topic below).

Basic elements in WFSCollider 4

- **Chain (Uchain, cont. 2)**

The duration of a Chain can be either a fixed time or 'infinite' (inf). Where a fixed duration Chain will automatically stop playing after it's duration has elapsed, an infinite duration will cause the Chain to keep playing indefinitely, until it is stopped by the user. If a Score includes an infinite duration chain, the duration of the score will also become infinite. Infinite chains are typically useful for live performances. Please keep in mind though that even if the duration of a Chain is set to infinite, that doesn't mean all the units in the chain produce sound infinitely. For example if there is a soundfile involved it might need to be set to 'loop', so that it will also play indefinitely.

Basic elements in WFSCollider 5

- **Chain (Uchain, cont. 3)**

Chains also have a 'releaseSelf' setting which defines their behavior inside a Score. If 'releaseSelf' is enabled (default) the Chain will take care of its own ending. If the Score is paused after the Chain was started, the Chain will keep playing and end itself after it's duration has passed. This is analogous to the "one shot" setting on some commercial sampler plugins and machines. If 'releaseSelf' is disabled however, the Score becomes in charge of when the sound ends. If the Score is paused while the Chain is playing, the Chain will keep on playing until the Score is unpaused again and passed its original end time.

Basic elements in WFS Collider 6

- **Unit (U)**

A Unit is a single processing entity. Units can only function as part of a Chain. The concept of a Unit could be compared to that of a plugin in commercial DAW's, both instrument and effect. But also the output stage is a Unit WFS Collider. For example, there can be a Unit that plays a soundfile, in a Chain together with a Unit that makes a WFS source. The signal will be routed from the soundfile Unit to the WFS Unit inside the Chain. If there would be no WFS Unit (or any other Unit that outputs sound), there will be no sound; the sound is generated but doesn't reach the outputs. Vice versa if there would be only a WFS Unit but no soundfile or other type of sound generating Unit in the Chain, there is also no sound. Then the WFS Unit will only output silence.