GASPs
Guitars with Ambisonic Spatial Performance
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The GASP project overview
“Guitars with Ambisonic Spatial Performance” (GASP) is an ongoing project where our expertise in surround sound algorithmic research is combined with off-the-shelf hardware and bespoke software to create a spatial Multichannel Guitar system. The GASP project seeks to bring a new musical experience to the guitarist. Research into multiple individually processed string timbres, generated by our multichannel electric guitars, in conjunction with virtual guitar processing software, and processed ambisonically, has provided alternative performance techniques, which may be used to further embrace interactive elements of surround guitar performance.

GASPerformance and GASProduction
GASP is an acronym for ‘Guitars with Ambisonic Spatial Performance’ (GASPerformance), however it can also mean ‘Guitars with Ambisonic Spatial Production’ (GASProduction).

We distinguish between these two applications as GASPerformance is largely associated with the performance and utilises new Wigware bespoke 6 channel surround plug-in within Reaper DAW coupled and with Guitar Rig as a real-time effect plug-in. This system can support up to six (one for each string) individual stereo timbres (providing 12 channels) which can be mapped across the ambisonic surround system in real time. This is a new development for the GASP project team. GASProduction utilises ProTools for initial individual string capture and editing, followed by Guitar Rig processing to affect individual strings as either mono or stereo timbres as post-production exercise. Once timbres have been selected from a bank of pre-sets already optimised for GASProduction, the individual wave files are rendered and imported into Reaper and subsequently spatialised using our bespoke Wigware plug-ins. See Software Section Below.

Timbre processing using Guitar Rig
Guitar Rig is a virtual effects processor designed to reproduce a vast range of guitar timbres from simulated valve amplifier tones for flexible routing and management of the many channels and audio streams needed to implement the system.

A number of new compositions have been created, investigated and mixed to enable a talk and demonstration to be shown at the Sounds in Space Research Symposium in June 2022.

Creation of style and timbral presets for surround performance.

Future GASP production ideas to consider:
- Bring out ‘edged’ into dedicated track – test as feature
- Investigate relationship of time in between notes slow strum or picking style with time delays and location/direction
- Process low notes as basis – octave shift
- Experiment with big clean rhythm sound, single clean delay, try with Yamaha Acoustic
- Try lower three strings dedicated timbre vs upper three strings different dedicated timbre
- Capture and separate slides
- Extract short melodies and combine onto one track
- Consider educational aspects of separate strings - analysis of performance at micro level
- Use of full choirs, then apply subtractive composition techniques
- Explore spatial separation of dissimilar elements
- Extract modulation TF – string bend on chords
- Level of programme material vs ability to locate i.e. relationship of level (SLP) to position
- Integration of discrete string parts and timbre selection into Ableton for alternative performance method
- Revisit the room? Investigate automation of B format to simulate effect of room rotation (the whole mix)

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