



SARAH WEAVER

LIST OF COMPOSITIONS

UNIVERSAL SYNCHRONY MUSIC (2018)

for telematic electroacoustic large ensemble

Universal Synchrony Music (USM) is a cosmic multi-year telematic music project in collaboration with the NASA Kepler Mission and NASA ArtSpace exploring musical, technological, and metaphorical realizations of synchrony. Sonification of data from the Kepler Mission on stars and planets 1000-3000 light years away is utilized for presence and interaction for synchrony. Synchrony is defined as perception of alignment of distributed time and space components. This electroacoustic telematic ensemble is comprised of renowned experimental musicians utilizing their individual innovative musical languages in manifestation of the piece.

USM Volume 1 premiered in April 2013 at University of California San Diego and Simons Center of Stony Brook University as part of the "Virtual Tour: A Reduced-Carbon Footprint Concert Series" coordinated by Mark Dresser and Michael Dessen. Sonifications of data streams on variable stars from the NASA Kepler Mission were shaped as an ongoing "cosmic stream" component of the piece, together with musical concepts including interaction and harmonization with cosmic sounds, creating perception of synchrony across local and extreme distances, exploring the nature of closeness and distance beyond physical characteristics, the nature of sound in a vacuum, and cultural and human levels of synchrony. <http://virtualtour2013.com>
http://www.nasa.gov/connect/artspace/creative_works/feature-sarah-weaver.html

USM Volume 2 premiered April 6, 2014 at CCRMA of Stanford University and Simons Center of Stony Brook University. Continued this work and focuses on the metaphor of the NASA Kepler Mission's search for habitable planets as a search for synchrony. Over 700 planets had been identified in the habitable zone so far through this mission. USM Volume 2 sonifies these habitable planets and the stars they orbit, utilizing data such as light curves, phase curves, surface gravity, magnitude, radius, temperature, celestial coordinates, period, transit depth, transit duration, solar planet ratio, distance from Earth, and orbital alignments with Earth. This sonification gives presence to these planets and stars as a "third location" in the telematic concert and explores their attributes for synchrony. USM Volume 2 was developed in close consultation with the performers, data analysts, and technologists. The musical concepts include resonance, timbral synthesis, integration, nodal intersections, pulsation, contour, harmonics, inner universe and outer universe relations, and alignment as synchrony.
<http://scgp.stonybrook.edu/archives/11021>

USM Volume 3 premiered January 30-31, 2015 at Bing Concert Hall of Stanford University and DisPerSion Lab of York University Toronto. Emphasizes interdependence of habitability. The surround sound enables the expansive experience of spatialized data sonification such as orbiting, constellations, and being inside of a habitable planetary system. Visualization of the data is utilized interactively with the sonifications for added presence and processing of the objects. The piece begins with alignments of the orbits of hundreds of habitable planets in multiplanetary systems with Earth. This continues into more orbital alignments spatialized in rotation around the Kepler field. The second section sonifies and visualizes constellations of the stars of multiplanetary systems with habitable planets in the Kepler field. The third section expresses the metaphor of inner habitability of the self.

<http://web.stanford.edu/group/sso/cgi-bin/wordpress/concerts/2014-2015-season>
<http://arts.stanford.edu/event/stanford-symphony-orchestra-3>

USM Volume 4 premiered February 19, 2016 at Symphony Space, New York. Focuses on sonification and intuitive music related to orbital and constellation alignment of multiplanetary habitable systems in the Kepler area, the circumbinary multi-planet system Kepler-47 with habitable zone, and inner habitability. Palette 1 involves sonification and musical abstractions of orbital alignments with Earth of Kepler area planets in multiplanetary habitable systems, and constellations of the stars of these systems. Palette 2 is a structured improvisation based on inner habitability that utilizes reflections, mirroring, and synchronies of Palette 1 material extensions and abstractions. Palette 3 is inspired by sonification of Kepler-47. As a circumbinary multi-planet system, Kepler-47 contains two stars instead of the more typical single star, and has three planets. Within the Kepler Mission discoveries, a surprisingly high percentage of binary and multiple star systems contain habitable zones. Palette 4 begins with a more literal sonification of Kepler-47, including periodicity of insolation (solar radiation received at the surface of each planet). The subsequent material of Palette 4 is based on habitable zone emergence from binaries. Palette 5 is a structured improvisation on inner habitable zones, individually and collectively, with extensions and abstractions of materials from Palettes 3 and 4. The resultant synchrony of the piece is realized through synthesis of presence with these deep space systems, representations and intuitive transmissions of inherent synchronies, and the metaphorical realizations.

USM Volume 5 will premiere in 2019.

Artists: Sarah Weaver, conductor, Doug Van Nort, computer, electronics, sonifications.

Jane Ira Bloom, soprano saxophone, David Morales Boroff, violin, Min Xiao-Fen, pipa, Ned Rothenberg, alto saxophone, bass clarinet, David Taylor, bass trombone, Denman Maroney, piano, Mark Helias, bass, Gerry Hemingway, drumset, Sam Pluta, computer, electronics, Ray Anderson, trombone, Miya Masaoka, koto, Matt Wilson, drumset, Nicole Mitchell, flutes, Michael Desson, trombone, Myra Melford, piano, Mark Dresser, bass, York University Electroacoustic Orchestra directed by Doug Van Nort, CCRMA Ensemble directed by Chris Chafe.

Kepler/K2 Mission Data Collaborators: Jon Jenkins - Analysis Lead for the NASA Kepler Mission, Senior Research Scientist, SETI Institute, NASA Ames Research Center. Professors William Welsh, Jerome Orosz, and Donald Short, Astronomy Department, San Diego State University. Madeline Huberth, CCRMA, Stanford University. Daniel C. Fabrycky, Assistant Professor, Department of Astronomy and Astrophysics, University of Chicago.