

Astronomer creates music using star oscillations

August 13 2015, by Bob Yirka

Awkward Keystrokes of Y Cam

B. Ulaş (2015)

Larghetto ($\text{♩} = 60$)

Piano

Y Cam

Pno.

Y Cam

Pno.

Y Cam

Pno.

Y Cam

Sheet music for the composition. Credit: arXiv:1507.07307 [physics.pop-ph]

(Phys.org)—Astronomer Burak Ulaş, with the Izmir Turk College Planetarium in Turkey has taken his work into a musical dimension, using star oscillations as a source for a musical composition. He has uploaded a paper describing what he has done along with sheet music and an audio recording of his work to the preprint server *arXiv*—along with a shout-out to other pioneers in the field, from Kepler to Pythagoras to modern composer scientists Jenő Keuler and Zoltán Kolláth.

Astronomers and other star-gazers have long associated celestial bodies with music, the twinkling of some stars offers a tempting back-beat and some stars in particular offer a variety of opportunities. One such star, Y Cam A, Ulaş noted, offered enough oscillation data for its use in creating chords. It is actually a binary, which accounts for its twinkling, but instead of a steady on-off blinking, the system actually oscillates at four different frequencies. He mapped the lowest tone to the note A using the free online music synthesizer Audacity, then used that as a base to map three of the stars oscillating frequencies to notes commonly used in a chord progression popular in much of modern music—G, C, D. Playing the notes in the manner in which they were "broadcast" by Y Cam A resulted in an interesting tune, to say the least. To jazz up with the piece, quite literally, he added music he had created before (played on a piano) based on Y Cam A's whole tones that corresponded to a diminished whole tone scale, which is often used in jazz music. The result is a mixed bag of eerie pulsating sounds combined with a simple piano melody.

But that is not the end of the story, the current composition is based on just one star— Ulaş envisions using the oscillations from a multitude of other various [stars](#) to drive [music](#) played on a variety of instruments—combined they could provide the basis for an entire cosmic orchestral piece, which could be used perhaps, in video games, as the soundtrack for space based movies, or simply as something interested people could listen to while pondering the vast night sky.

More information: The Multiperiodic Pulsating Star Y Cam A as a Musical Instrument, arXiv:1507.07307 [physics.pop-ph]
arxiv.org/abs/1507.07307

Abstract

In this study we generate musical chords from the oscillation frequencies of the primary component of oscillating eclipsing Algol system Y Cam. The parameters and the procedure of the musical chord generation process from the stellar oscillations are described in detail. A musical piece is also composed in appropriate scale for Y Cam A by using the generated chords from the results of the asteroseismic analysis of the stellar data. The music scores and the digital sound files are provided for both the generated chords and the musical composition. Our study shows that the further orchestral compositions can be made from the frequency analysis results of several pulsating stars by using the procedure stated in present study

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