

# Cambridge makes music from 'dark energy'

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An invisible force so mysterious that it has yet to be understood by even the most eminent astronomers is being turned into music at a new Cambridge University exhibition.

The sound installation, which is being hosted by the University's Institute of Astronomy, will offer visitors the chance to hear sonic interpretations of so-called “dark energy”, created using data from observations of a cluster of galaxies more than a billion light years away.

Discovered in 1998, dark energy continues to perplex astronomers. Although they can detect its effects, and the way that it is accelerating the universe's rate of expansion, they cannot explain exactly what it is.

The free exhibition, which is called “Invisible”, will run for just four days at the end of September at the Institute on Madingley Road. It will be housed in three of the Institute's telescope domes, where PA systems will relay electronic, Indian and jazz music created using raw data about the enigmatic force.

Dr Carolin Crawford, from the Institute of Astronomy, who collaborated on the exhibition, said: “The aim is to get people who would not come to your average science exhibition curious about cutting edge astronomy in a different way.

“If you can interest people in the sounds of space, they start to engage with where those sounds come from and thus the scientific ideas the artists are responding to. Hopefully by turning the data into sound art, we

can take this particular bit of science to a much wider community.”

The exhibition was created by a London-based group called Flow Motion, which specialises in digital and sound art. Its creators began with data from Abell 2029, a cluster of galaxies one billion light years away in the constellation Serpens that astronomers have used to study the effects of dark energy.

For some of the soundscapes, X-ray images obtained with the NASA Chandra satellite were fed through computer software that translated the various numbers into musical values, denoting changes in pitch or intensity. The group also asked classical Indian composers and jazz musicians to produce their own music by using the raw material in a similar way. When visitors enter each of the domes, they will be able to hear these sonic interpretations along with snippets of recorded conversation discussing the ideas of darkness and invisibility.

In addition to the main exhibition, Flow Motion and Carolin Crawford have run two workshops for local secondary school pupils, aimed at encouraging them to find similarly creative responses to scientific ideas. Some of the pupils' writings, thoughts and recordings will be incorporated within the sound installation.

Anna Piva, from Flow Motion, said: “Dark energy is something that is invisible and that at the moment no-one really understands.

“That means that at the moment, music can, in a sense, represent dark energy just as clearly as scientists can. One of the main things we have tried to do in this exhibition is to fill the space between science and the arts.”

Earlier this month, four Cambridge scholars, Dr Richard McMahan, Dr Mike Irwin, Dr Nic Walton and Dr Nelson Nunes, were named winners

of the prestigious Gruber Cosmology Prize for their role in the discovery of dark energy nine years ago. They were part of a group of astronomers who set out to measure how much the universe's expansion was slowing down due to gravity, but instead found that because of dark energy, the fate of the universe is just to keep expanding, faster and faster.

The exhibition will open at 7pm on Wednesday September 26th, with an introductory talk about both the sound installations and the science behind them. It will then be open from 12noon until 7pm on the 27th, 28th and 29th, and from 12noon until 4pm on the 30th. There will be a repeat of the introductory talk on Saturday September 29th at 2pm.

Source: University of Cambridge

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