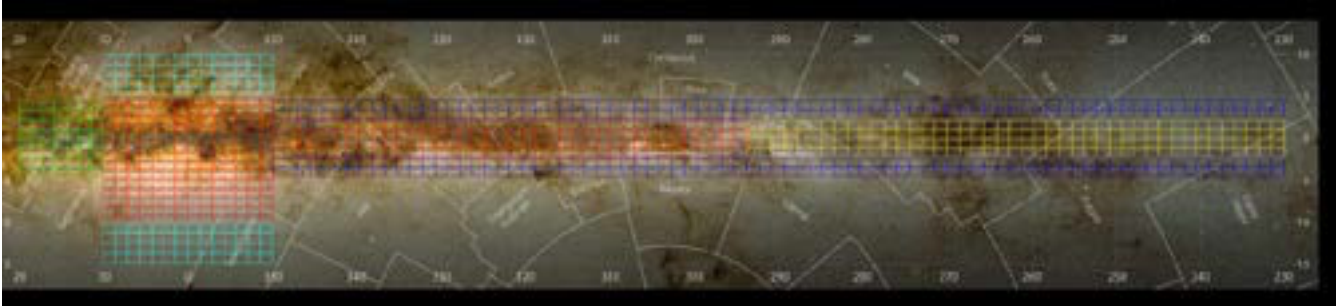


PRESS RELEASE

October 18, 2023



Credits: ESO / D. Minniti

Astronomers gathered last week for a conference at the Specola Vaticana to present the latest results of a deep survey of the heart of the Milky Way, called **the VVVX survey (VISTA Variables in the Via Lactea extended)**.

The team repeatedly observed the inner parts of our galaxy in the infrared for the last 12 years using the 4m VISTA telescope at ESO/Paranal, Chile, and have generated a large database of nearly a billion stars as well as recording their changes in brightness over time. The central regions of the Galaxy are some of the obscured regions in the night sky due to the intervening gas and the dust – creating a “zone of avoidance”. However, using the infrared wavelengths, the astronomers using the VVVX survey have been able to peer through the dust and see even distant galaxies on the other side of the Milky Way.

The astronomers presented various novel results of the VVVX survey at the conference. Among the highlights of the conference – was a new catalogue of nearly 20 thousand never seen before galaxies just behind the plane of the Milky Way – allowing us for the first time to discover structures in the Universe hidden behind our galaxy. This work was led by Drs. Laura Baravalle, Fernanda Duplancic and Sol Alonso, of the National Universities of Cordoba and of San Juan in Argentina, who were also former students at the Vatican Observatory Summer Schools.

Another former student of the Vatican Observatory Summer School of 2018, Dr. Alonso Luna from the Universidad Andres Bello in Chile and the European Southern Observatory in Germany – presented his exciting work on hyper-velocity stars found at the heart of the galaxy. These extremely fast stars moving at velocities larger than 2 million kms/hr are thought to be ejected by the supermassive black hole located at the center of our galaxy.

Dr. Phil Lucas from the University of Hertfordshire presented the discovery of a new kind of variable stars in the nuclear disk of the Milky Way. These rare stars have wild changes in brightness, unlike any other sources known before, and have been named “dipping giants” and appear to be concentrated towards the Galactic center. In a complementary study, Dr. Jason Sanders of the University College London, United Kingdom, managed to measure the age of the nuclear disk and the bar surrounding the supermassive black hole at the center of our galaxy, using a special kind of variable stars called Miras, that are detected by the thousands by the VVVX survey. Surprisingly, he found that the nuclear disk formed nearly 8 billion years ago, before our Sun was even born.

These and many other discoveries presented at the conference hosted by the Vatican Observatory pave the road for a better understanding of the structure of the Milky Way and the formation of all galaxies in general.

More information can be found at: www.vvvsurvey.org

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Images



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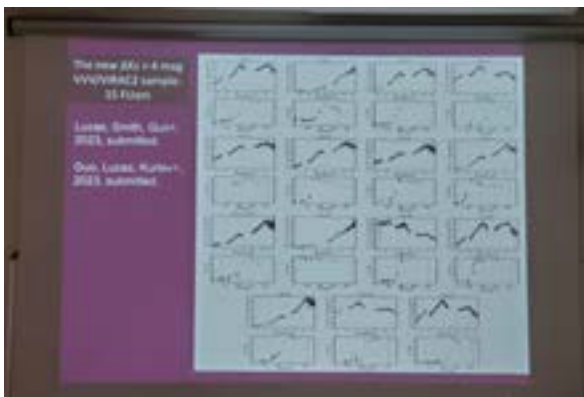
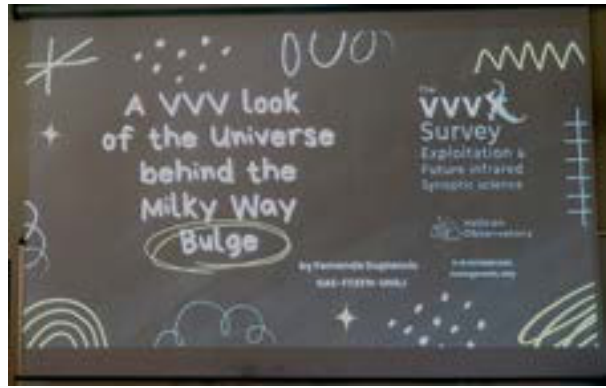
A vertical poster for a workshop. At the top right is a QR code. The main title is 'The VVV Survey Exploitation & Future infrared Synoptic science'. Below this is a paragraph of text: 'The VVV/VVVX survey has been monitoring the inner Milky Way with sub-arcsec spatial resolution in near-IR bands for 13 years, and generating 50-200 epoch light curves of hundreds of millions of sources down to Ks=17 mag. This database allows to probe the structure and the evolution of the most obscured part of our galaxy. This is the first survey in the near-IR to cover nearly 80% of the luminous Milky Way mass in such depth and with such unprecedented number of epochs. The goal of the Workshop is to bring together active VVVX Science Team members and collaborators, giving them the opportunity to present their results, to work intensively on the ongoing projects, and to plan future collaborations and follow up studies.' Below the text is the Vatican Observatory logo and the dates '09-13 OCTOBER 2023' and location 'Castelgandolfo, Italy'. At the bottom are logos for CATA, ESO, UFSC, and INAF, along with the organizing committee names: 'PHIL CALZADA, GUSTAVO MORAES (EHAAR), SCARLETT B. TAVARES, CATERINA MORAES, JACQUELINA POLINI, ROBERTO SANTI'.

Meeting announcement poster



The galactic center of the Milky Way. Credits: ESO

Images



Some images from the invited talks at the meeting



Group photo for the meeting at conference dinner held at the Specola Vaticana