Leibniz Institute for
Astrophysics Potsdam

Press release 09/23
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Michelson Prize for best doctoral thesis to Dr Timon Thomas

Dr Timon Thomas, postdoctoral researcher at the Leibniz Institute for Astrophysics Potsdam (AIP), is awarded the Michelson Prize by the Faculty of Science of the University of Potsdam for his outstanding dissertation on the field of theoretical astrophysics.

On 29 June 2023, following the central graduation ceremony of the University of Potsdam at Neues Palais, the Faculty of Science will hold a ceremony to recognize extraordinary achievements in studies and teaching. The faculty awards the Michelson Prize for the best doctoral degree, the Jacob Jacobi Prize for the best undergraduate degree, and the Leopold von Buch Prize for the best bachelor's degree in the academic year 2022/23, as well as two prizes for outstanding teaching.

This year, the Michelson Prize goes to Dr. Timon Thomas, a postdoctoral researcher in the section Cosmology and High Energy Astrophysics at AIP. The award, named after Albert Abraham Michelson, a Nobel laureate in physics, is endowed with a total of 1,500 euros and is supported by the UP Transfer GmbH at the University of Potsdam.

Astrophysicist Dr. Timon Thomas will receive the award for his extraordinary doctoral thesis at the University of Potsdam and the Leibniz Institute for Astrophysics Potsdam (AIP) on the transport of cosmic rays in astrophysical plasmas. In his work, praised as a "world-class masterpiece," Timon Thomas investigated how cosmic rays move along galactic magnetic fields and how they influence the evolution of galaxies. He developed an innovative hydrodynamic theory and implemented it in one of the most complex numerical codes in modern astrophysics. This allowed him to make an innovative interpretation of a new class of radio observations in the centre of our Milky Way. Shortly after receiving his PhD, he has already published twelve papers, six of which were first-authored.

"I am delighted to be awarded this prize and happy that all the work I have done over the last few years has led to this award. My research is more concerned with cosmic ray theory, but with radio harps we have found an application that has general appeal" said Timon Thomas. Such radio harps are structures of nearly parallel lines that researchers observe in the radio region at the center of the Milky Way, and whose formation Timon Thomas was able to explain using his theory and detailed model calculations. Timon Thomas emphasizes: "This success was only possible thanks to the support of my supervisor Professor Christoph Pfrommer and my colleagues."

Professor Christoph Pfrommer, supervisor of the PhD thesis and head of the section Cosmology and High Energy Astrophysics at the AIP, praises the achievement of his former PhD student: "This is a truly outstanding work in every respect, demonstrating both a deep mathematical and physical understanding as well as all aspects of modern computational physics. This brilliant work will enable fundamental breakthroughs in galaxy formation and plasma astrophysics in the future, with the extremely creative and innovative approaches developed here."

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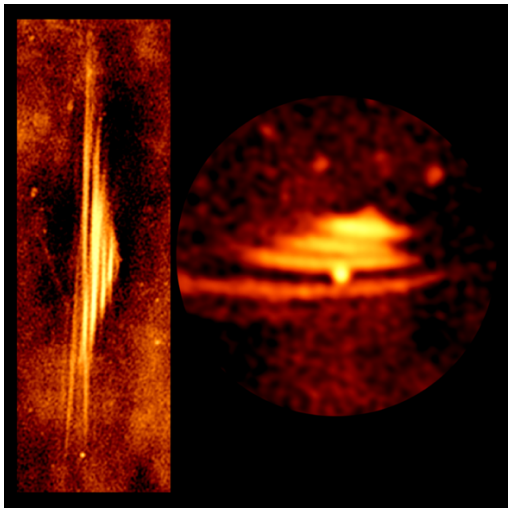
Press release of the University of Potsdam

https://www.uni-potsdam.de/de/medieninformationen/detail/2023-06-29-preise-fuer-jahrgangsbeste-an-der-mathematisch-naturwissenschaftlichen-fakultaet (German)

The awardee Dr Timon Thomas
Credit: Lisa Seiler



Radio synchrotron harp and Christmas tree in the galactic centre.
Left: The synchrotron radiation of the particles traces the magnetic field lines, making them visible in the form of harp strings.
Right: The star which emitted the particles moved through the centre of this structure, from bottom to top, and is now at its tip. The particles flow left and right along the horizontal magnetic field lines.

Credit: AIP/T. Thomas/MeerKat

Combined image of the galaxy M81.
Top part: Observations with the Hubble Space Telescope, (cyan), Spitzer infrared telescope (red) and the Chandra X-ray satellite (blue).
Bottom part: Visualisation of the cosmic ray driven galactic wind in one of the galaxies simulated by Timon Thomas.

Credit: AIP/T. Thomas, Observations: NASA/JPL-Caltech/STScI/CXC/UofA/ESA/AURA/JHU

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The key areas of research at the Leibniz Institute for Astrophysics Potsdam (AIP) are cosmic magnetic fields and extragalactic astrophysics. A considerable part of the institute's efforts aim at the development of research technology in the fields of spectroscopy, robotic telescopes, and e-science. The AIP is the successor of the Berlin Observatory founded in 1700 and of the Astrophysical Observatory of Potsdam founded in 1874. The latter was the world's first observatory to emphasize explicitly the research area of astrophysics. The AIP has been a member of the Leibniz Association since 1992.