TECHNISCHE UNIVERSITÄT DRESDEN

Faculty of Physics

PHYSICS COLLOQUIUM

Speaker:

Prof. Günther Hasinger
Designated founding director of the German Center for Astrophysics in Görlitz,
TU Dresden,
and DESY Zeuthen

Topic:

Is Dark Matter made up of Primordial Black Holes?
Inaugural lecture

Time and place:

Tuesday, October 10, 2023, **2:50 pm** – hybrid event
The colloquium will be held in REC/C213.
Online participation possible:
Zoom-Meeting: Meeting-ID: 631 3817 8900 / passcode: PC-WiSe23
https://tu-dresden.zoom-x.de/j/63138178900?pwd=am9nSzYyeUh3SWxMdnNBWkpUaXl5UT09

Host:

Dean of the Faculty of Physics Prof. Carsten Timm

Abstract:

The cosmic X-ray background radiation has been almost completely resolved into discrete objects, mainly from the growth of massive black holes in the universe. However, a few years ago, evidence for a new population of black holes from the early universe emerged from the correlation of fluctuations in the X-ray and infrared backgrounds. Similarly, quasars have been discovered with astonishingly massive black holes already formed shortly after the Big Bang. The detection of gravitational waves from the merger of pairs of very heavy, apparently non-rotating stellar black holes presents another puzzle. Recently, using the micro-lensing effect and distance determination with the ESA satellite GAIA, about 20 black holes in our galaxy have been discovered with masses that cannot be generated by stellar processes. In the past few months, the discovery of several galaxies that formed very early in the universe with the James Webb Space Telescope has been surprising, seeming to contradict the classical understanding of cosmology. All of these phenomena can be explained by so-called primordial black holes that formed immediately after the Big Bang and may represent the previously unexplained dark matter.

Bio:

Günther Hasinger, born in 1954 in Oberammergau, is a world-leading X-ray astronomer. He was director of the Leibniz Institute for Astrophysics in Potsdam, the Max Planck Institutes for extraterrestrial physics and plasma physics, the astronomical institute at the University of Hawaii, and science director of the European Space Agency. His research focuses on the cosmological evolution of black holes and the nature of dark matter, among other topics. He has received numerous awards for his research and scientific achievements, including the Leibniz Prize from the German Research Foundation and the COSPAR Award for outstanding contributions to space

research. He is a member of several scientific academies. In addition to numerous scientific papers, Dr. Hasinger is the author of the award-winning book "The Fate of the Universe," which explains astrophysics and cosmology to a broader audience.