



PRESS RELEASE

Discovering the secrets of the Cosmos: the Institute for Fundamental Physics of the Universe opens in Trieste

Four prestigious institutions – SISSA, ICTP, INAF and INFN – unite for this great project. Inauguration on 2nd October with a speech by the renowned South African cosmologist George Ellis



Trieste, 1 October 2018

“If we are here, if there are celestial bodies, galaxies and stars, it is because these structures have taken on a certain shape, and this shape has been forged by the fundamental laws of Physics, which have produced entities which are now among the biggest mysteries of Science, Dark Energy and Dark Matter. Shedding light on their nature and essence will be an exciting challenge for the new generations of scholars and for IFPU researchers”. These are the words of George Ellis, distinguished scientist and Professor Emeritus of Applied Mathematics at the University of Cape Town. Ellis will be the keynote speaker at the opening ceremony of a new institute with a highly impressive name and goals.

The Institute for Fundamental Physics of the Universe (IFPU) will open its doors in Trieste on 2 October with an inaugural ceremony to be held in the Main Lecture Hall of the SISSA’s Miramare Campus. This will be home to the institute which has been founded thanks to the agreement and work of four important national and international scientific institutions – SISSA - Scuola Internazionale Superiore di Studi Avanzati and Abdus Salam International Centre for Theoretical

Physics of Trieste (ICTP), Istituto Nazionale di Astrofisica (INAF) and Istituto Nazionale di Fisica Nucleare (INFN). The four institutes involved will be represented at the opening ceremony by Stefano Ruffo (SISSA director), Fernando Quevedo (ICTP director), Nicolò D'Amico (INAF president) and Fernando Ferroni (INFN president).

With a multidisciplinary approach, *ad hoc* research teams and innovative investigation models, the institute aims to explore the fundamental laws of Nature from a cosmological and astrophysical perspective.

From the infinitely small, to the infinitely big: the challenges facing the Institute

Recent discoveries, like the accelerated expansion of the Universe, Higgs boson and gravitational waves, associated to high precision observations of the cosmic micro-wave background conducted by the Planck satellite and to the increasingly detailed large-scale mapping of the structure of the Universe, have made increasingly more evident the need to put together different communities in a renewed dialogue between theory and observations.

Important questions related to the first moments after the Big Bang, the nature of Dark Matter and Dark Energy have been contextualized in a new awareness that fundamental physics and that of the Universe are inextricably linked. The Universe can be considered the laboratory of fundamental physics *par excellence*. Such a vision requires growing synergy, where the experimental results must be interpreted in light of the most advanced theories, while the latter find contexts of choice for their observational tests in astrophysics and in cosmology.

In this sense, the primary mission of the new Institute will be to unite the different communities engaged on these major themes and to develop an interdisciplinary approach to the questions they raise. The goal is to promote synergy between groups separated by geographical and cultural barriers through a structure that offers spaces and funds for innovative activities that are focused on the great challenges that this new phase of physics presents us.

International projects and networking

The institute will start with the intellectual contribution of the researchers of the four founding members, but a consistent development is expected in the coming years. Positions for post-doctorates and the participation of PhD students and visiting foreign scientists are already envisaged. A precise commitment of IFPU will be to extend and consolidate international collaborations, an essential step to pursue major present and future projects connected with the discovery of space. "Collaborations are the only way to move forward today. Great results, as the

LIGO/VIRGO project on gravitational waves has demonstrated, are obtained with the contribution of many realities, many scientists committed to one major common goal» explains George Ellis. “My wish is that this institute will know how to build great and fruitful collaborations.”

A prestigious collaboration

The importance of the agreement is highlighted by the directors and presidents of the four institutions. Stefano Ruffo, the director of SISSA comments, “I think it is important to underline the highly interdisciplinary approach this Institute will have in collecting and understanding data, gathered using innovative algorithms. This is one of its strong points. The opening of IFPU will also be the opportunity to breathe new life into our building in via Beirut.”

“ICTP enjoys a long history of exploring the mysteries of the Universe” says ICTP Director Fernando Quevedo, “This history goes back to ICTP founder Abdus Salam and his Nobel-winning research on the theory of the unified weak and electromagnetic interaction between elementary particles.” He adds, “Cosmology and astroparticle physics remain two of the most exciting areas in physics today. We are pleased to be joining forces with SISSA, INAF and INFN to continue this journey of discovery in a multidisciplinary way.”

Nicolò D’Amico, president of INAF, adds, “We are honoured to be part of this new scientific collaboration. IFPU’s goal is extraordinarily ambitious, but I am convinced that the synergy of excellence involved will allow to reach equally extraordinary results, to unveil how our universe is made and how it ‘functions’.”

Fernando Ferroni, president of INFN, concludes, “Until now, the dark side of the universe has resisted every attempt to penetrate its mysteries. This initiative, which proposes to unite valid experimentalists and theorists of different research institutes to design new ways to deal with the problem is therefore a significant event and harbinger of important progress.”

Image by Pixabay

PRESS CONTACT

SISSA

Nico Pitrelli
→pitrelli@sissa.it
T + 39 040 3787462,
M + 39 339 1337950
Donato Ramani
→ ramani@sissa.it
T + 39 040 3787513,
M + 39 342 80 222 37

ICPT

Mary Ann Williams
→mwilliams@ictp.it
+39 040 2240 603

INAF

Marco Galliani
→ufficiostampa@inaf.it
→marco.galliani@inaf.it
T + 39 06 355 33 390
M +39 335 17 78 428

INFN

Eleonora Cossi
→eleonora.cossi@presid.infn.it
T +39.06 68400364