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Colloquia: SciNeGHE 2016

Preface

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The 11th edition of the workshop *Science with the New Generation of High Energy Gamma-ray Experiments* (SciNeGHE), held in Pisa, Italy, on October 18-21, 2016, has focused on the study of high-energy gamma-ray sources from a multi-wavelength and multi-messenger perspective, particularly in connection with gravitational waves, both from the observational and theoretical point of view.

Cosmic messengers, such as photons, neutrinos and cosmic rays, are the key to understand the physics of extreme astrophysical sources such as blazars, pulsars, supernova remnants and mergers of neutron stars and/or black holes. The announcement made by the LIGO and Virgo Collaborations of the first *direct* detection of gravitational waves from the merger of two massive black holes has inaugurated the era of gravitational waves astronomy and opened a new chapter in the multi-messenger study of the Universe.

Space-borne observatories like *Fermi*, Swift, INTEGRAL and AGILE, and ground-based instruments like H.E.S.S., MAGIC, VERITAS and HAWC have revolutionized our view of the gamma-ray sky. They have discovered new populations of gamma-ray emitters and contributed to probe the high-energy acceleration and emission mechanisms operating in these sources. Furthermore, the second generation of ground-based interferometers, like Advanced LIGO and Advanced Virgo, will add complementary information to fully decipher the laws governing these intriguing and powerful cosmic sources.

The workshop, hosted in the Aula Magna "F.lli Pontecorvo" of the University of Pisa, was organized in seven plenary sessions, with invited and contributed talks devoted to updates on current and planned space-borne and ground-based gamma-ray experiments and reviews on status and results of cosmic ray, neutrino and gravitational wave detectors. Thanks to the hospitality of the EGO Director Prof. Federico Ferrini and his staff the session dedicated to the contributions on gravitational waves experiments and neutrinos experiments was held at the *European Gravitational Observatory* (EGO) in Cascina, near Pisa. In that occasion, EGO organized guided tours where the participants had the opportunity to visit the Advanced Virgo interferometer.

The poster session was dedicated to the contributions of Ph.D. students and young postdoctoral researchers. Nearly 80 scientists from various countries worldwide attended the workshop.

We are grateful to the Association *Frontier Detectors for Frontier Physics*, in the person of the president Prof. Angelo Scribano, that awarded four prizes to outstanding young researchers who brilliantly contributed to the scientific program of the workshop.

The recipients were: Shubhanshu Tiwari (TIFPA/GSSI, Trieste), Barbara Patricelli (SNS and INFN, Pisa), Andrea Taracchini (Max Planck Institute for Gravitational Physics, Munich) and Niccolò Di Lalla (INFN, Pisa).

On behalf of the Local Organizing Committee we warmly thank the chairpersons of the sessions and all the speakers for their contribution to the success of SciNeGHE 2016.

We would like to express our gratitude to the INFN Pisa secretary Claudia Tofani and to Claudia Cardelli who guaranteed the smooth development of the workshop in all its phases and to Mauro Giannini and Maurizio Garzella for the computer support and technical help, respectively.

A special thank to Séverine Perus who helped us to organise the conference day at EGO.

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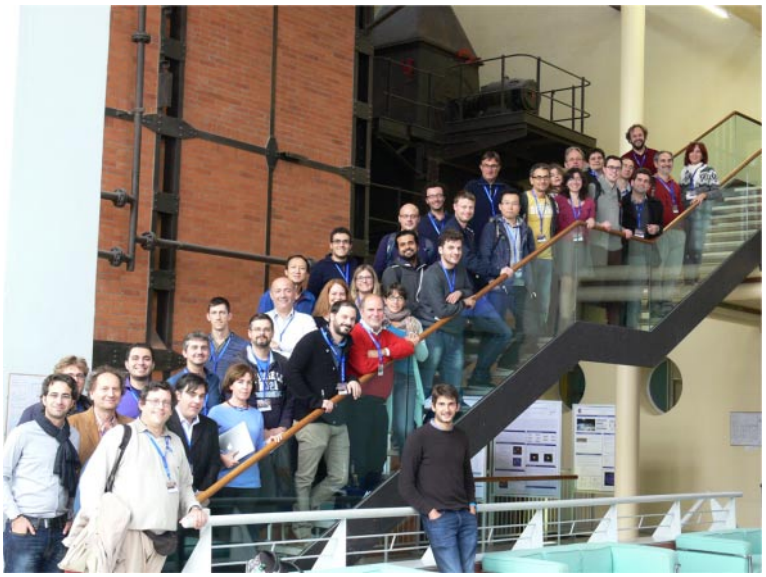

Group picture of the participants to the 11th edition of SciNeGHE in Pisa.

Prof. Angelo Scribano, president of *Frontier Detectors for Frontier Physics*, awards Shubhanshu Tiwari (TIFPA/GSSI), one of the winners of the *Young Scientist SciNeGHE Awards*.