

Preface

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The XX edition of the Incontri di Fisica delle Alte Energie (IFAE) meeting took place in Florence from 3 to 5 April 2024. Organized by the INFN unit of Florence and the Department of Physics and Astronomy of the University of Florence, it was held in the “Ospedale degli Innocenti” venue, a 15th century building in the historical city center of Florence, a UNESCO World Heritage Site. Originally designed by Filippo Brunelleschi and conceived as a children’s orphanage, it nowadays hosts a modern conference center in its beautiful decorated halls, besides a museum and a nursery.

The conference was opened by the representatives of the institutions involved in the organization and sponsoring the event: the director of the INFN unit of Florence, Giovanni Passaleva; the director of the Department of Physics and Astronomy of the University of Florence, Duccio Fanelli; the chair of the conference series, Alessia Tricomi; and the president of INFN, Antonio Zoccoli.

Several review talks about some of the most important current research topics in high-energy physics opened the scientific sessions. Marumi Kado from Max Planck Institute gave a review about the current and future challenges for HL-LHC and future colliders; Francesco Terranova from University and INFN of Milano Bicocca reviewed the recent results and perspectives in neutrino physics; and Fiorenza Donato from University and INFN of Turin depicted the current landscape of interpretations and open problems in cosmic-ray physics. After the introductory session there were more than 50 oral contributions, mainly from young, early-career researchers; during the whole conference a poster display was active, with about 60 contributions and a dedicated session on the afternoon of 4 April. The contributions were grouped in four sessions: Energy Frontier, Intensity Frontier, Astroparticle and Cosmology, New Technologies; during each oral sessions some invited review talks about the hot session topics were given by young prominent researchers in the field. A special talk about the INFN outreach activities was given by Francesca Scianitti (INFN Communications Office) on 4 April after the poster session. The conference was closed by an open round table about future technologies for high-energy physics attended by recognized experts and chaired by Giacomo Sguazzoni.

As usual, during the closing remarks the chair of the IFAE conference series, Alessia Tricomi, proclaimed the winners of the conference awards. The four prizes for the best oral presentation in each session were awarded to Matteo Parriciatu (University and INFN of Roma 3, Energy Frontier), Luca Marsicano (INFN of Genova, Intensity Frontier), Francesca Passalacqua (INFN of Padova, Astroparticle and Cosmology), and

Francesco Chiapponi (INFN of Bologna, New Technologies). The award for the best invited session review talk went to Ludovico Vittorio (LAPTh Annecy, Intensity Frontier), and that for the best poster to Francesco Di Clemente (INFN of Ferrara).

The Local Organizing Committee was formed by Oscar Adriani (chair), Francesca Bucci, Giacomo Graziani, Piergiulio Lenzi, Nicola Mori, Andrea Tesi, Elena Vannuccini and Lorenzo Viliani. On behalf of it we warmly thank the Scientific Organizing Committee for the help and advices in organizing the conference, all the participants, and especially the Florentine students and young researchers who greatly helped in practically running the sessions.

A special thank goes to the conveners of the conference: Silvio Donato, Valentina Mariani, Davide Pagani and Elvira Rossi for the Energy Frontier session; Francesco Brizioli, Renato Quagliani, Mauro Valli and Laura Zani for the Intensity Frontier session; Giorgio Dho, Francesco Maria Follega, Martina Gerbino and Viola Sordini for the Astroparticle and Cosmology session; and Laura Bandiera, Diego Ciangottini, Francesco Piergiovanni and Gianluigi Silvestre for the New Technologies session. They took care of the management of each session, including selecting the contributions from the proposed abstracts, chairing the sessions, and peer-reviewing the proceedings. Their invaluable contribution has been fundamental for the success of the conference.

The final acknowledgement goes to the supporting institutions and entities: INFN, University of Florence, and the CAEN S.p.A. company.