



## Preface

The 20<sup>th</sup> International Symposium on Very High Energy Cosmic Ray Interactions (ISVHECRI 2018), held at Nagoya University, Nagoya, Aichi, Japan from 21 to 25 May 2018, attracted more than 120 participants. The Symposium was carried out under the auspices of the International Union of Pure and Applied Physics (IUPAP) with financial support from KMI and ISEE, Nagoya University and JSPS KAKENHI Grant Number 26247037.

ISVHECRI is a biennial conference series launched in 1980 at Nakhodka (Russia) dedicated to very high energy cosmic ray research. A specific aspect of the ISVHECRI series is to focus on high energy hadron collisions of cosmic ray particles and related topics including all directions of very, and extremely, high energy cosmic ray studies with air showers. These Symposia highlight the accelerator studies of hadronic interactions at very high energies and the consequent interpretation of the cosmic ray data as well as an understanding of hadronic interactions from cosmic ray data.

Since 2002 this series has brought together cosmic ray physicists and scientists involved with high energy accelerators and colliding beam facilities, including the LHC and RHIC. The previous two ISVHECRI meetings held at CERN in 2014 and Moscow in 2016 were ideal opportunities for cosmic-ray and particle physicists engaged in accelerator experiments to directly discuss problems of mutual interest following the successful start-up of the Large Hadron Collider. The Nagoya 2018 Symposium extended the scope of interests to the production of neutrinos and gamma-rays in the atmosphere or inter-stellar matter inspired by recent rapid progress of multi-messenger astrophysics.

Topics covered in this Symposium:

- Recent accelerator data and results
- High & super-high energy cosmic rays
- Hadronic interaction models and cross sections
- New EAS Installations
- Emulsion Chamber & Hybrid results
- Extensive air showers
- Exotic phenomena
- Neutrinos and Inclusive Muons
- Matter-Antimatter Asymmetry
- Space experiments data

The Symposium consisted of plenary sessions, including invited review talks, as well as highlight talks and posters selected from the submitted abstracts. A Public Lecture entitled 'Explore the invisible universe' was presented by Professor Takaaki Kajita.

In parallel to the public lecture, participants were offered a short tour of the emulsion facility in F-lab of Nagoya University.

The complete Timetable and Speakers' slides can be found on the Symposium website <https://indico.cern.ch/e/isvhecricri2018>.

We wish to thank the International Advisory Committee, the Scientific Program Committee, the Local Organizing Committee and all the speakers who made this a very successful meeting. Thanks are also due to the administration of Nagoya University for their support for the Symposium.

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