Report on the scientific activity in Japan

M. Bawaj – INFN Sez. di Perugia

Horizon 2020
European Union funding
for Research & Innovation

Acknowledgements:
This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 734303

My Curriculum

- I got my PhD degree in physics in 2016
- since then I have been associated with INFN Sez. in Perugia
- since the beginning of my post-doc I work in the Virgo squeezing team and recently I collaborate with Virgo suspension team

Activities

Two stays in Japan:

- 20/07/2019 – 28/07/2019 work on the experiment in the ICRR laboratory (Tokyo)
- 07/09/2019 – 15/09/2019 participation in TAUP2019 International conference on the Astroparticle and Underground Physics (Toyama)

Collaboration

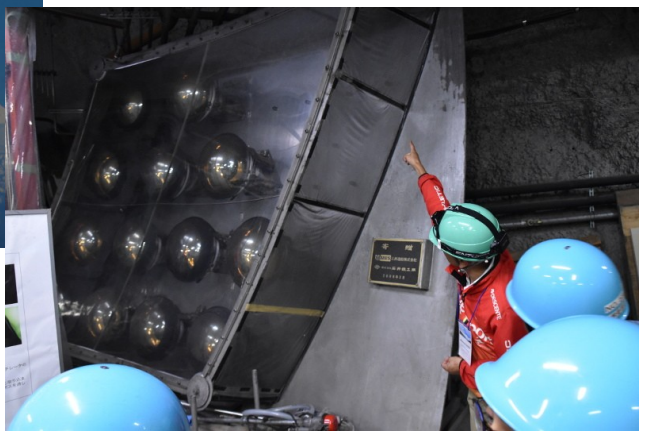
- ICRR is a part of University of Tokyo
- The institute participates in the construction of GW detector KAGRA
- We collaborate with the scientific groups from National Astronomical Observatory of Japan (NAOJ) led by prof. Takayuki Tomaru and from Institute for Cosmic Ray Research (ICRR) led by dr Takafumi Ushiba

Experiment in the ICRR labortory

- The laboratory is placed in Kashiwa campus near Tokyo
- I collaborate with the group working on Virgo’s payload (silica fiber for test mass suspension)
- We develop measurement techniques for determining silicon substrate quality factor

TAUP2019 international conference

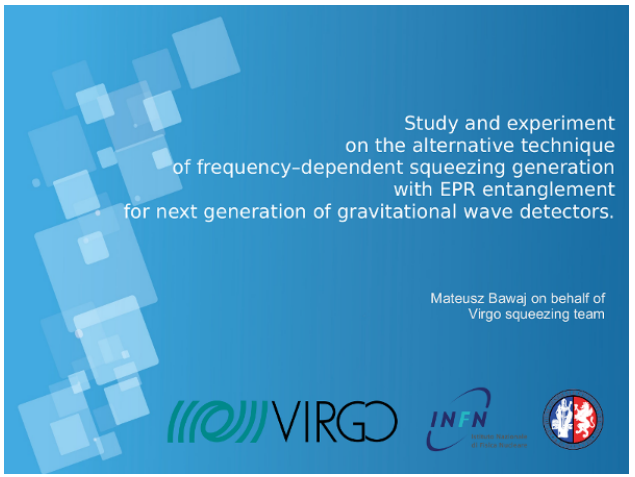
- TAUP is biennial International conference on the Astroparticle and Underground Physics
- Gravitational waves became of interest at this conference when the first Japanese gravitational wave detector KAGRA was built underground
- During the conference I visited Kamioka mine where Kamiokande, Super-Kamiokande and KAGRA experiments are located



Presentation

- During the conference I gave an oral presentation dedicated to gravitational waves
- The talk was about the proceedings in the EPR scheme implementation in Virgo detector

“Study and experiment on the alternative technique of frequency–dependent squeezing generation with EPR entanglement for next generation of gravitational wave detectors."



Summary

- This year two stays in Japan:

  - ICRR laboratory

  - TAUP conference

- of total 16 days of stay
- activities were related to both fields of my scientific activity

  - squeezing

  - monolithic suspensions