



ET-0000A-19
KAGRA-M1909820



Letter of Intent
on the scientific collaboration between
the Einstein Telescope collaboration
and
the KAGRA collaboration

This letter outlines the intent of the two parties, the Einstein Telescope collaboration (ET collaboration, hereafter) and the KAGRA collaboration, to collaborate in the development of the technologies needed to upgrade the current detectors and to realise the 3rd generation of gravitational wave (GW) observatories such as ET.

The Parties:

- 1) ET refers to the scientific and technical collaboration that is currently conducting the study and proposal and eventually the construction, use and development of the third generation ET GW Observatory. ET is currently coordinated by the ET Steering Committee and in the near future by the ET General Assembly and the ET Executive Board.
- 2) KAGRA denotes the scientific collaboration based on a 3 km laser-interferometer GW observatory at Kamioka, Gifu, Japan. Its three co-hosting institutions are the Institute for Cosmic Ray Research (ICRR) in the University of Tokyo, the National Astronomical Observatory in Japan (NAOJ), and the High Energy Accelerator Research Organization (KEK). The KAGRA project is conducted in international collaboration. Its scientific direction and strategy is led by KAGRA Scientific Congress (KSC), while its financial nature is handled by Executive Office.

Scope of the letter:

This letter has the scope to initiate a coherent and coordinated cooperation between ET and KAGRA on specific items of common interest:

- a) GW science, including astrophysics of the sources, application to cosmology, and strategical discussion of the design of detectors.
- b) Research and development of the future detectors, including the issues of
 - i. Underground infrastructures
 - ii. Cryogenics
 - iii. Optics and optical coatings
 - iv. Electronics
 - v. Suspensions and seismic noise filtering

- vi. Newtonian noise evaluation, and
 - vii. Environmental noise monitoring.
- c) Data analysis of GWs, including its computing.

The collaboration is not exclusive and open to other partners in the GW research field.

Actions:

Specific collaboration actions have to be defined in the months following the joint signature of this letter, through a bottom-up process initiated by the different research teams. The KAGRA management and the ET management will endorse and eventually support these initiatives according to their internal decisional processes.

Perugia, 16th of February, 2019

SIGNATURES:

For the KAGRA collaboration

Prof. Takaaki Kajita



For the ET Collaboration

Dr. Michele Punturo



Dr. Harald Lück

