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Annex 2: Collaboration in the Development of Advanced Superconducting Josephson Device Technology and Quantum Voltage Applications

- **Expected Achievements**
  - Contribution to the global international metrology community in the field of the quantum electrical standards, especially Josephson voltage standards and related topics.
  - Publication of joint research papers.

- **Financial Arrangement for Exchange of Visits for Collaboration under This Project**
  - Generally provided by the sending party.
  - Otherwise, each party shall bear the expenses it incurs with the implementation of the collaboration.

For the National Institute of Standards and Technology of the Department of Commerce of the United States of America

Dr. Willie E. May
Associate Director

Date: May 20, 2014

For the Korea Research Institute of Standards and Science of the Republic of Korea

Dr. Dae-Im Kang
President

Date: May 20, 2014

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Annex 2: Collaboration in the Development of Advanced Superconducting Josephson Device Technology and Quantum Voltage Applications

- **Subject**

  Development of advanced Josephson device technology and quantum voltage applications

- **Collaborators**

  - NIST: Dr. Samuel P. Benz (samuel.benz@nist.gov), Quantum Electronics and Photonics Division
  - KRISS: Dr. Yonuk Chong (yonuk@kriss.re.kr), Division of Convergence Technology

- **Background & Aim of Proposed Collaboration**

  - Superconducting Josephson devices are key elements in quantum electronics.
  - NIST is the world-leader in superconducting quantum electronics including Josephson-based devices.
  - KRISS has over 20 years of Josephson research experiences and has good research infrastructure with competent research scientists.
  - Within their existing research collaboration, the parties pursue the following objectives, in particular:
    - provide the scientific basis for the realization of the definition of voltage using Josephson voltage standards.
    - share and explore scientific information and know-how concerning superconducting devices and high-performance Josephson devices for precision electrical measurement and standardization.
  - Publish and internationally present results of the cooperation in the field of Superconducting Josephson device technology.
  - This Annex 2 is subject to the terms and conditions of the Cooperation Arrangement Between the National Institute of Standards and Technology of the United States of America and the Korea Research Institute of Standards and Science of the Republic of Korea Concerning Technical Cooperation in Measurement Sciences.

- **Forms of Cooperation**

  - The project shall be carried out in cooperation on the basis of collaboration.
  - Short and long term exchange of core-researchers.
  - Establishment of a global collaborative network among Josephson technology researchers.
  - Joint workshops and symposiums.