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Franco NORI, Chief Scientist

RIKEN Center for Emergent Matter Science (CEMS),

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Research Review Report

Dr. Franco Nori joined RIKEN in 2002 and was appointed to the chief scientist position in 2013. His work involves theoretical investigations at the intersection of quantum optics, atomic physics, nano-science, and condensed matter physics. The research review was performed by the above named six reviewers, including two external experts, at the Wako campus on January 26, 2016. Dr. Nori made presentations on his research activities and achievements for the period of 2008 through 2015, perspectives of his research, and laboratory management. Based on these presentations, the question-and-answer sessions that followed, and the research report written by Dr. Nori, we reached the following conclusions.

Dr. Nori's contribution to physics extends from circuit QED to condensed matter physics and quantum information physics. Although such vastly different areas of work are difficult to evaluate by a single measure, the committee recognizes that his research maintains high standards across these interdisciplinary fields. Among his recent works, one of the highlights is the observation of the dynamical Casimir effect in circuit QED. Dr. Nori's theoretical research always has relevance to on-going or near-future

experiments. Such an interaction between theory and experiment, which is essential for further developing the field, is a unique feature of Dr. Nori's works.

Dr. Nori has published not only many highly-cited original papers but also a number of review articles in a timely manner. In these reviews, Dr. Nori identifies topics that are just becoming hot under the surface, and puts them into a coherent framework to grow it as a new interdisciplinary field. This approach has been proven to be highly useful for the physics community.

The laboratory of Dr. Nori consists of RIKEN employees (two permanent staff scientists, one contract employee, six postdocs) as well as many active visiting scientists. As for personnel mobility, former postdocs have been successfully promoted to positions outside at universities, research institutes, and companies. Some of the visiting scientists used to be in his group and indicate a high willingness to continue to work with him, suggesting Dr. Nori's good laboratory management.

In summary, Dr. Nori is an outstanding researcher who is regarded as one of the top-level theoretical physicists in the world. A number of his significant research achievements are based on wide collaborations with theorists and experimentalists both inside and outside of RIKEN. Dr. Nori plays the role of "glue" (*nori* in Japanese) as mentioned by himself at the time of his presentation. Dr. Nori, as a chief scientist in RIKEN, is expected to play further role to develop interdisciplinary collaborations in RIKEN through his wide spectrum in science.