

Japan-EU Joint Workshop on Advanced Quantum Technology for Future Innovation

September 3rd and 4th

Sorbonne University, Pierre & Marie Curie campus, Paris

Workshop Program

Monday September 3rd

Registration (12:30-13:30)

Opening Session

13:30-13:35 Yasuhiko Arakawa (The University of Tokyo), *Opening Remarks*

13:35-13:40 Greeting by JST

13:40-14:45 Greeting by Ministry Education, culture, sports, science and technology (MEXT)

13:45-13:55 Greeting by the Quantum Flagship Coordination Office (FCO)

Session 1: Overview of National/EU Projects on Quantum Technologies in EU and Japan

13:55-14:15 Daniel Esteve (CEA Saclay)

“The European flagship initiative for Quantum Technologies”

14:15-14:35 Yasuhiko Arakawa (The University of Tokyo)

“National Projects on Quantum Technology in Japan”

Session2: Quantum Computing I

14:35-15:05 Yasunobu Nakamura (The University of Tokyo, ERATO)

“Macroscopic quantum machines”

15:05-15:35 Frank Wilhelm-Mauch (Saarland University and QSA)

“Quantum computers in 2018”

Coffee Break (15:35-16:00)

Session 3: Quantum Communication and Sensing

16:00-16:30 Masahiro Kitagawa (Osaka University)

“Room temperature nuclear hyperpolarization and quantum encoding for hyper-sensitive NMR and MRI”

16:30-17:00 Jörg Wrachtrup (University of Stuttgart)

Title (TBD)

17:00-17:30 Nobuyuki Imoto (Osaka University)

“Frequency conversion of single photons emitted from atom/ion quantum memory for telecommunications”

17:30-18:00 Philippe Grangier (Institut d'Optique, CNRS)

“Recent progress in continuous variable quantum cryptography”

Cocktail Reception sponsored by the Embassy of Japan in France (18:30-20:00)

Tuesday September 4th

Registration (8:00-8:45)

Session 4: Quantum Computing II

8:45-9:15 Yoshihisa Yamamoto (ImPACT)

“Physics of quantum-to-classical crossover and coherent Ising machines”

9:15-9:45 Carlo Reita (CEA, LETI)

“Towards scalable silicon quantum computing”

9:45-10:15 Seigo Tarucha (RIKEN)

“Research on spin-based quantum computing with quantum dots”

Coffee Break (10:15-10:40)

Session 5: Quantum Simulation

10:40-11:10 Christian Gross (Max Planck Institute of Quantum Optics)

“Quantum simulation of the Hubbard model – From hidden correlations to magnetic polarons”

11:10-11:40 Yoshiro Takahashi (Kyoto University)

"Advanced quantum simulator with novel spin and orbital degrees of freedom"

Lunch (11:40-13:00)

Session 6: Presentation by Young Researchers

13:00-13:30 Eleni Diamanti (UPMC, Paris)

“Practical secure quantum communications”

13:30-14:00 Erika Kawakami (OIST)

“Capacitive read-out of the Rydberg states towards the realization of a quantum computer using electrons on helium”

14:00-14:30 Anthony Laing (University of Bristol)

“Photonic simulations of molecular quantum dynamics”

14:30-15:00 Shuntaro Takeda (The University of Tokyo)

“A strategy for large-scale optical quantum computing”

Coffee Break (15:00-15:25)

Session 7: Summary Discussion

15:25-15:40 Jean-Yves Roger (European Commission)

“Overview of EU-Japan cooperation in digital”

15:40-16:25 Round Table Discussion

16:25-16:40 Summary Report (Frank Wilhelm-Mauch)

Closing Session

16:40-16:50 Yves Samson (Delegate director, CEA, FR) and Yasuhiko Arakawa, *Closing Remarks*