Yuimaru KUBO

Ph.D.
Group Leader

Quantum Dynamics Unit
Okinawa Institute of Science and Technology
1919-1 Tancha, Onna, Okinawa 904-0495, Japan
☎ *+81-98-982-3544*
✉ *yuimaru.kubo@oist.jp*
ORCID: https://orcid.org/0000-0001-5803-4287
ResearcherID: I-6546-2013

Selected Publications

[1] J. R. Ball, Y. Yamashiro, H. Sumiya, S. Onoda, T. Ohshima, J. Isoya, D. Konstantinov, and **Y. Kubo**,
Appl. Phys. Lett. **112**, 204102 (2018).

[2] "Proposal for detecting a single electron spin in a microwave resonator"
P. Haikka, **Y. Kubo**, A. Bienfait, P. Bertet, and K. Mølmer,
Phys. Rev. A **95**, 022306 (2017).

[3] "Controlling Spin Relaxation with a Cavity"
C. Grezes, **Y. Kubo**, B. Julsgaard, T. Umeda, J. Isoya, H. Sumiya, H. Abe, S. Onoda, T. Ohshima, K. Nakamura, I. Diniz, A. Auffeves, V. Jacques, J.-F. Roch, D. Vion, D. Esteve, K. Moelmer, and P. Bertet,
Comp. Rend. Phys. **17**, 693 (2016).

[4] "Controlling Spin Relaxation with a Cavity"
A. Bienfait, J.J. Pla, **Y. Kubo**, X. Zhou, M. Stern, C.C. Lo, C.D. Weis, T. Schenkel, D. Vion, D. Esteve, J.J.L. Morton, and P. Bertet,
Nature **531**, 74 (2016).

[5] "Reaching the quantum limit of sensitivity in electron spin resonance"
A. Bienfait, J. J. Pla, **Y. Kubo**, M. Stern, X. Zhou, C. C. Lo, C. D. Weis, T. Schenkel, M. L. W. Thewalt, D. Vion, D. Esteve, B. Julsgaard, K. Moelmer, J. J. L. Morton, and P. Bertet,
Nature Nanotech. **11**, 253 (2016).

[6] "Competition between electric field and magnetic field noise in the decoherence of a single spin in diamond" P. Jamonneau, M. Lesik, J. P. Tetienne, I. Alvizu, L. Mayer, A. Dréau, S. Kosen, J.-F. Roch, S. Pezzagna, J. Meijer, T. Teraji, **Y. Kubo**, P. Bertet, J. R. Maze, and V. Jacques,
Phys. Rev. B **93**, 024305 (2016).

[7] "Turn to the dark side"
Y. Kubo,
Nature Phys. **12**, 21 (2016).

[8] "Storage and retrieval of microwave fields at the single-photon level in a spin ensemble"
C. Grezes, B. Julsgaard, **Y. Kubo**, W. L. Ma, M. Stern, A. Bienfait, K. Nakamura, J. Isoya, S. Onoda, T. Ohshima, V. Jacques, D. Vion, D. Esteve, R. B. Liu, K. Mølmer, and P. Bertet,
Phys. Rev. A **92**, 020301 (2015).

[9] "Quantum technologies with hybrid systems"
G. Kurizki, P. Bertet, **Y. Kubo**, K. Mølmer, D. Petrosyan, P. Rabl, and J. Schmiedmayer, Proc. Natl. Acad. Sci. **112**, 3866 (2015).

[10] "Flux Qubits with Long Coherence Times for Hybrid Quantum Circuits"
M. Stern, G. Catelani, **Y. Kubo**, C. Grezes, A. Bienfait, D. Vion, D. Esteve, P. Bertet, Phys. Rev. Lett. **113**, 123601 (2014).

[11] "Multimode Storage and Retrieval of Microwave Fields in a Spin Ensemble"
C. Grezes, B. Julsgaard, **Y. Kubo**, M. Stern, T. Umeda, J. Isoya, H. Sumiya, H. Abe, S. Onoda, T. Ohshima, V. Jacques, J. Esteve, D. Vion, D. Esteve, K. Mølmer, P. Bertet, Phys. Rev. X **4**, 021049 (2014).

[12] "Electron Spin Resonance Detected by a Superconducting Qubit"
Y. Kubo, I. Diniz, C. Grezes, T. Umeda, J. Isoya, H. Sumiya, T. Yamamoto, H. Abe, S. Onoda, T. Ohshima, V. Jacques, A. Dréau, J.-F. Roch, A. Auffeves, D. Vion, D. Esteve and P. Bertet,
Phys. Rev. B **86** 064514 (2012).

[13] "Macroscopic Quantum Tunneling and Phase Diffusion in a $La_{2-x}Sr_xCuO_4$ Intrinsic Josephson Junction Stack"
Y. Kubo, A.O. Sboychakov, F. Nori, Y. Takahide, S. Ueda, I. Tanaka, A.T.M.N. Islam and Y. Takano,
Phys. Rev. B **86** 144532 (2012).

[14] "Storage and Retrieval of a Microwave Field in a Spin Ensemble"
Y. Kubo, I. Diniz, A. Dewes, V. Jacques, A. Dréau, J.-F. Roch, A. Auffeves, D. Vion, D. Esteve and P. Bertet, Phys. Rev. A **85** 012333 (2012).

[15] "Hybrid Quantum Circuit with a Superconducting Qubit Coupled to a Spin Ensemble"
Y. Kubo, C. Grezes, A. Dewes, T. Umeda, J. Isoya, H. Sumiya, N. Morishita, H. Abe, S. Onoda, T. Ohshima, V. Jacques, A. Dréau, J.-F. Roch, I. Diniz, A. Auffeves, D. Vion, D. Esteve and P. Bertet,
Phys. Rev. Lett. **107** 220501 (2011). (Selected for "Editor's Suggestion")

[16] "Fabrication of Submicron $La_{2-x}Sr_xCuO_4$ Intrinsic Josephson Junction Stacks"
Y. Kubo, Y. Takahide, T. Tanaka, S. Ueda, S. Ishii, S. Tsuda, A.N. Islam, I. Tanaka and Y. Takano,
J. Appl. Phys. **109** 033912 (2011).

[17] "Strong Coupling of a Spin Ensemble to a Superconducting Resonator"
Y. Kubo, F.R. Ong, P. Bertet, D. Vion, V. Jacques, D. Zheng, A. Dréau, J.-F. Roch, A. Auffeves, F. Jelezko, J. Wrachtrup, M.F. Barthe, P. Bergonzo and D. Esteve,
Phys. Rev. Lett. **105** 140502 (2010).
[Selected for "ViewPoint" in Physics: Physics **3**, 80 (2010), and highlighted in "Research News and Views" in Nature: Nature **468**, 44 (2010).]

[18] "Macroscopic Quantum Tunneling in a $Bi_2Sr_2CaCu_2O_{8+\delta}$ Single Crystalline Whisker"
Y. Kubo, Y. Takahide, S. Ueda, Y. Takano and Y. Ootuka,
Appl. Phys. Express **3** 063104 (2010).

[19] "Scaling Behavior of the Crossover to Short-Stack Regimes of Josephson Vortex Lattices in $Bi_2SrCa_2Cu_2O_{8+\delta}$ Stacks"

I. Kakeya, **Y. Kubo**, M. Kohri, M. Iwase, T. Yamamoto and K. Kadowaki,
Phys. Rev. B **79** 212503 (2009).

[20] "Switching Current Distributions and Subgap Structures of Underdoped (Hg,Re)$Ba_2Ca_2Cu_3O_{8+\delta}$ Intrinsic Josephson Junctions"
S. Ueda, T. Yamaguchi, **Y. Kubo**, S. Tsuda, Y. Takano, J. Shimoyama and K. Kishio,
J. Appl. Phys. **106** 074516 (2009).

[21] "Intrinsic Josephson Properties of $La_{2-x}Sr_xCuO_4$"
Y. Kubo, T. Tanaka, Y. Takahide, S. Ueda, T. Okutsu, A.T.M.N. Islam, I. Tanaka and Y. Takano,
Physica C **468** 1922 (2008).

[22] "Easy Fabrication of Mesa-Type $Bi_2Sr_2CaCu_2O_{8+\delta}$ Intrinsic Josephson Junction Using Cross-Whisker Junction"
Y. Kubo, T. Okutsu, S. Ueda, Y. Takahide and Y. Takano,
J. Phys.: Conf. Ser. **108** 012044 (2008).

[23] "Measurements of the Switching Current Distribution in $REBa_2Cu_3O_y$ (RE = Eu, Er) Intrinsic Josephson Junctions"
S. Ueda, T. Okutsu, **Y. Kubo**, S. Ishii, S. Tsuda, T. Yamaguchi and Y. Takano,
J. Phys.: Conf. Ser. **108** 012043 (2008).

[24] "Intrinsic Josephson properties in (Hg,Re)$Ba_2Ca_3Cu_4O_{10+\delta}$ single crystals"
S. Ueda, T. Okutsu, **Y. Kubo**, S. Ishii, S. Tsuda, T. Yamaguchi, S. Horii, J. Shimoyama, K. Kishio and Y. Takano,
Physica C **468** 1925 (2008).

[25] "Dynamical Properties of Josephson Vortices in Mesoscopic Intrinsic Josephson Junctions in Single Crystalline $Bi_2Sr_2CaCu_2O_{8+\delta}$"
K. Kadowaki, I. Kakeya, T. Yamamoto, T. Yamazaki, M. Kohri and **Y. Kubo**,
Physica C **437-438** 111 (2006).

Invited Talks

1. "Magnetic Resonance at the Quantum Limit
   73st The Japan Physical Society (JPS) Annual Meeting, Noda, Japan, March 2018.

2. "Hybrid quantum systems with spins and superconductors (and photons)"
   7th Summer School on Semiconductor/Superconducting Quantum Coherence Effect and Quantum Information, Shuzenji, Japan, August 2017.

3. "Reaching the quantum limit of sensitivity in electron spin resonance"
   JSAP international workshop, National Institute of Information (NII), Tokyo, March 2017.

4. "Magnetic Resonance at the Quantum Limit
   The Society of Electron Spin Sceince and Technology (SEST), Osaka, Japan, November, 2016.

5. "Circuit-QED and Spins"
   63th The Japan Society of Applied Physics (JSAP) Spring Meeting, Tokyo, Japan, March 2016.

6. "Hybrid Quantum Systems with Superconductors and NV centers in Diamond"
   71st The Japan Physical Society (JPS) Annual Meeting, Sendai, Japan, March 2016.

7. "Magnetic Resonance at the Quantum Limit
   The International Symposium on Nanoscale Transport and Technology (ISNTT2015), Atsugi, Japan, November, 2015.

8. "Electron Spin Resonance Detected by a Superconducting Qubit"
   Workshop for Quantum Simulations of Open Quantum Systems, Freiburg, Germany, November, 2013.

9. "Hybrid Quantum Circuit with a Supeconducting Qubit and an Electron Spin Ensemble"
   iQIT workshop, Corfu, Greece, Septempber, 2013.

10. "Hybrid Quantum Circuit with a Supeconducting Qubit coupled to an Electron Spin Ensemble"
    Coherent Control in Complex Quantum Systems, OIST, Okinawa, Japan, May 2013.

11. "Hybrid Quantum Circuit with a Supeconducting Qubit coupled to an Electron Spin Ensemble"
    DPG Spring Meeting, Regensburg, Germany, March 2013.

12. "Hybrid Quantum Circuit with a Supeconducting Qubit coupled to an Electron Spin Ensemble"
    GDR, Physique Quantique Mesoscopique, Aussois, France, December 2011.

13. "Strong Coupling of a Spin Ensemble to a Superconducting Resonator: Towards Superconducting Hybrid Quantum Circuits"
    GDR Information Quantique, Nice, France, March 2011.

14. "Strong Coupling of a Spin Ensemble to a Superconducting Resonator"
    Hasselt Diamond Workshop 2011 (SBDD XVI), Hasselt, Belgium, Feburary 2011.