Publications

Under USC affiliation (with DOI links. Also to be found at http://singlespin.usc.edu/.)

Submitted papers

16. High-frequency electron paramagnetic resonance spectroscopy of surface paramagnetic impurities in nanodiamond
   F. H. Cho, V. Stepanov, R. D. Akiel, X. Zhang and S. Takahashi
   Submitted (2016);

Published/accepted papers in refereed journals

15. Electron spin resonance spectroscopy of small ensemble paramagnetic spins using a single nitrogen-vacancy center in diamond
   C. Abeywardana, V. Stepanov, F. H. Cho and S. Takahashi
   J. Appl. Phys. 120, 123907 (2016) [doi]

14. Measurement of paramagnetic spin concentration in a solid-state system using double electron-electron resonance
   V. Stepanov and S. Takahashi
   Phys. Rev. B, 94, 024421 (2016); [doi]

13. High-frequency electron paramagnetic resonance spectroscopy of nitroxide-functionalized nanodiamonds in aqueous solution
   R. D. Akiel, V. Stepanov and S. Takahashi
   Cell Biochem. Biophys. (2016); [doi]

12. Investigating functional DNA grafted on nanodiamond surface using spin-labeling and electron paramagnetic resonance spectroscopy
   R. Akiel, X. Zhang, C. Abeywardana, V. Stepanov, P. Z. Qin and S. Takahashi
   J. Phys. Chem. B, 120, 4003-4008 (2016); [doi]

11. Spin coherence in a Mn3 single-molecule magnet
   C. Abeywardana, A. M. Mowson, G. Christou, and S. Takahashi
   Appl. Phys. Lett., 108, 042401 (2016); [doi]

10. 230/115 GHz electron paramagnetic resonance/double electron-electron resonance spectroscopy
   F. H. Cho, V. Stepanov and S. Takahashi
   Methods Enzymol., 563, 95-118 (2015); [doi]

9. High-frequency and high-field optically detected magnetic resonance of nitrogen-vacancy centers in diamond
   V. Stepanov, F. H. Cho, C. Abeywardana and S. Takahashi
   Appl. Phys. Lett. 106, 063111 (2015); [doi]

8. Magnetic resonance spectroscopy using a single nitrogen-vacancy center in diamond
   C. Abeywardana, V. Stepanov, F. H. Cho and S. Takahashi
   Proc. SPIE 9269, 92690K (2014); [doi]

7. A high-frequency electron paramagnetic resonance spectrometer for multi-dimensional, -frequency and -phase pulsed measurements
   F. H. Cho, V. Stepanov and S. Takahashi
   Rev. Sci. Instrum. 85, 075110 (2014) [doi]

6. Low temperature synthesis and characterization of Lanthanide-doped BaTiO3 nanocrystals
   S. P. Culver, V. Stepanov, M. Mecklenburg, S. Takahashi and R. L. Brutchey
   Chem. Commun. 50, 3480-3483 (2014) [doi]
5. Grafting nitroxide radicals on nanodiamond surface using click chemistry
   E. E. Romanova, R. Akiel, F. H. Cho and S. Takahashi
   *J. Phys. Chem. A* **117**, 11933-11939 (2013) [doi]

4. Spin decoherence and electron spin bath noise of a nitrogen-vacancy center in diamond
   Z.-H. Wang and S. Takahashi
   *Phys. Rev. B* **87**, 115122 (2013) [doi]

3. Free-electron laser-powered pulsed electron paramagnetic resonance spectroscopy
   S. Takahashi, L.-C. Brunel, D. T. Edwards, J. van Tol, G. Ramian, S. Han and M. S. Sherwin
   *Nature* **489**, 409-413 (2012) [doi]

2. Distance measurements across randomly distributed nitroxide probes from the temperature dependence of the electron spin phase memory time at 240 GHz
   D. T. Edwards, S. Takahashi, M. S. Sherwin and S. Han
   *J. Mag. Res.* **223**, 198-206 (2012) [doi]

1. Decoherence in crystals of quantum molecular magnets
   S. Takahashi, I. S. Tupitsyn, J. van Tol, C. C. Beedle, D. N. Hendrickson, and P. C. E. Stamp
   *Nature* **476**, 76-79 (2011) [doi]

Prior to USC

21. Cavity dumping of an injection-locked free-electron laser
   S. Takahashi, G. Ramian, and M. S. Sherwin
   *Appl. Phys. Lett.* **95**, 234102 (2009) [doi]

20. Coherent manipulation and decoherence of $S=10$ single-molecule magnets
   S. Takahashi, J. van Tol, C. C. Beedle, D. N. Hendrickson, L.-C. Brunel and M. S. Sherwin
   *Phys. Rev. Lett.* **102**, 087603 (2009) [doi]

19. High-field phenomena of qubits
   J. van Tol, G. W. Morley, S. Takahashi, D. R. McCamey, C. Boehme, M. E. Zvanut
   *Appl. Mag. Res.* **36**, 259-268 (2009) [doi]

18. Quenching spin decoherence in diamond through spin bath polarization
   S. Takahashi, R. Hanson, J. van Tol, M. S. Sherwin and D. D. Awschalom
   *Phys. Rev. Lett.* **101**, 047601 (2008) [doi]

17. Large Mn25 single-molecule magnet with spin $S=51/2$: magnetic and high-frequency electron paramagnetic resonance spectroscopic characterization of a giant spin state
   M. Murugesu, S. Takahashi, A. Wilson, K. A. Abboud, W. Wernsdorfer, S. Hill and G. Christou
   *Inorg. Chem.* **47**, 9459-9470 (2008) [doi]

16. Pulsed EPR spectrometer with injection-locked UCSB free-electron laser
   S. Takahashi, D.G. Allen, J. Seifter, G. Ramian, M. S. Sherwin, J. van Tol, L.-C. Brunel
   *Infrared Phys. Technol.* **55**, 426-428 (2008) [doi]

15. Submegahertz linewidth at 240 GHz from an injection-locked free-electron laser
   S. Takahashi, G. Ramian, M. S. Sherwin, L.-C. Brunel and J. van Tol
   *Appl. Phys. Lett.* **91**, 174102 (2007) [doi]

14. A diffraction-compensating 0-25 ns free space terahertz delay line for coherent quantum control
   D. G. Allen, L. Persechini, S. Takahashi, G. Ramian and M. S. Sherwin
   *Rev. Sci. Instrum.* **78**, 113103 (2007) [doi]

13. Are Lebed’s magic angles truly magic?
   S. Takahashi, A. Betancur-Rodiguez, S. Hill, S. Takasaki, J. Yamada and H. Anzai
12. Study of non-magnetic impurity effects of the organic superconductor (TMTSF)$_2$ClO$_4$
S. Takahashi, S. Hill, S. Takasaki, J. Yamada and H. Anzai
AIP Conf. Proc. 850, 619 (2006) [doi]

11. Periodic-orbit resonance in the quasi-1D organic superconductor (TMTSF)$_2$ClO$_4$
S. Takahashi, S. Hill, S. Takasaki, J. Yamada and H. Anzai
Phys. Rev. B 72, 024540 (2005) [doi]

10. A rotating cavity for high-field angle-dependent microwave spectroscopy of low-dimensional conductors and magnets
S. Takahashi and S. Hill
Rev. Sci. Instrum. 76, 023114 (2005) [doi]

9. Angle-resolved mapping of the Fermi velocity in quasi-two-dimensional conductors and superconductors: probing quasiparticles in nodal superconductors
S. Takahashi and S. Hill
J. Appl. Phys. 97, 10B106 (2005) [doi]

8. Fermi surface studies of quasi-1D and quasi-2D organic superconductors using periodic orbit resonances in high magnetic fields
S. Takahashi, A. E. Kovalev, S. Hill, S. Takasaki, J. Yamada, H. Anzai, J. S. Qualls, K. Kawano, M. Tamura, T. Naito and H. Kobayashi
International Journal of Modern Physics B 18, 3499-3504 (2004) [doi]

7. A comparison between high-symmetry Mn$_{12}$ single-molecule magnets in different ligand/solvent environments
S. Hill, N. Anderson, A. Wilson, S. Takahashi, K. Petukhov, N. E. Chakov, M. Murugesu, J. M. North, E. del Barco, A. D. Kent, N. S. Dalal, and G. Christou
Polyhedron 24, 2280-2292 (2005) [doi]

6. A spectroscopic comparison between several high-symmetry S = 10 Mn$_{12}$ single-molecule magnets
S. Hill, N. Anderson, A. Wilson, S. Takahashi, N. E. Chakov, M. Murugesu, J. M. North, N. S. Dalal, and G. Christou
J. Appl. Phys. 97, 10M510 (2005) [doi]

5. Discrete easy-axis tilting in Mn$_{12}$-acetate, as determined by EPR: implications for the magnetic quantum tunneling mechanism
S. Takahashi, R. S. Edwards, J. M. North, S. Hill and N. S. Dalal
Phys. Rev. B 70, 094429 (2004) [doi]

4. Temperature dependence of the Josephson plasma resonance between vortex phases in the organic superconductor $\kappa$-(BEDT-TTF)$_2$Cu(NCS)$_2$
D. K. Benjamin, S. Takahashi, S. Hill and J. S. Qualls
Solid State Commun. 131, 719-723 (2004). [doi]

3. High field high frequency EPR techniques and their application to single molecule magnets
R. S. Edwards, S. Hill, P. Goy, R. Wylde and S. Takahashi
Physica B 346-347, 211-215 (2004) [doi]

2. Effect of an in-plane magnetic field on the interlayer phase coherence in the extreme-2D organic superconductor $\kappa$-(BEDT-TTF)$_2$Cu(NCS)$_2$
A. E. Kovalev, S. Takahashi, S. Hill and J. S. Qualls
Int. J. Mod. Phys. B 17, 3547 (2003) [doi]

1. Periodic orbit resonance in (TMTSF)$_2$ClO$_4$
A. E. Kovalev, S. Hill, S. Takahashi, T. N. Dhakal, S. Takasaki, J. Yamada H. Anzai and J. S. Brooks

Curriculum Vitae
J. Appl. Phys. 93, 8665-8667 (2003) [doi]

**Book Chapters**

1. *Microwave spectroscopy of Q1D and Q2D organic conductors*
   S. Hill and S. Takahashi
   in The Physics of Organic Superconductors and Conductors, A. G. Lebed (eds.), Springer, New York (2008) [ISBN: 978-3-540-76667-4] [arXiv:condmat/0608490]

**Papers in non-refereed journals**

5. *Coherent manipulation and decoherence of S=10 single-molecule magnets*
   S. Takahashi, J. van Tol, C. C. Beedle, D. N. Hendrickson, L.-C. Brunel and M. S. Sherwin
   Selected for the Mag Lab Reports highlights issue in Volume6 Issue 2 2009 [link]

4. *Quenching spin decoherence in diamond through spin bath polarization*
   S. Takahashi, R. Hanson, J. van Tol, M. S. Sherwin and D. D. Awschalom
   Selected for the Mag Lab Reports highlights issue in Volume6 Issue 2 2009 [link]

3. *The UCSB MM-FEL injection locking system*
   G. Ramian, S. Takahashi and M. S. Sherwin
   Proceeding of FEL 2007, Novosibirsk, Russia (2007) [link]

2. *A method to study angle-dependent high field microwave magneto-conductivity using a cavity perturbation technique*
   S. Takahashi and S. Hill
   Selected for the NHMFL Reports highlights issue in Volume11 Issue 1 2004 [link]

1. *Probing the Fermi surfaces of quasi-two-dimensional organic superconductors by high field resonant microwave conductivity technique*
   S. Takahashi, K. Petukhov, A. E. Kovalev, D. Benjamin, S. Hill, J. S. Qualls, K. Kawano, M. Tamura, T. Naito and H. Kobayashi
   Selected in the NHMFL Reports highlights issue in Volume11 Issue 1 2004 [link]