

Selected Scientific Publications Generated from Research Conducted in the 100 Tesla Multi-Shot Magnet

2018

B. J. Ramshaw, K. A. Modic, Arkady Shekhter, Yi Zhang, Eun-Ah Kim, Philip J. W. Moll, Maja D. Bachmann, M. K. Chan, J. B. Betts, F. Balakirev, A. Migliori, N. J. Ghimire, E. D. Bauer, F. Ronning & R. D. McDonald *Quantum limit transport and destruction of the Weyl nodes in TaAs* **Nature Communications** 9, 2217 (2018).

P. Giraldo-Gallo, J. A. Galvis, Z. Stegen, K. A. Modic, F. F. Balakirev, J. B. Betts, X. Lian, C. Moir, S. C. Riggs, J. Wu, A. T. Bollinger, X. He, I. Božović, B. J. Ramshaw, R. D. McDonald, G. S. Boebinger, A. Shekhter *Scale-invariant magnetoresistance in a cuprate superconductor* **Science** 361, 479–481 (2018).

2017

Zengwei Zhu, Jinhua Wang, Huakun Zuo, Benoît Fauqué, Ross D. McDonald, Yuki Fuseya & Kamran Behnia *Emptying Dirac valleys in bismuth using high magnetic fields* **Nature Communications** 8, 15297 (2017).

Modic, K.A., Ramshaw, B.J., Betts, J.B., Breznay, N. P., Analytis, J. D., McDonald, R. D., and Shekhter, A. *Robust spin correlations at high magnetic fields in the harmonic honeycomb iridates* **Nature Communications** 8, 180 (2017).

Philip J. W. Moll, Toni Helm, Shang-Shun Zhang, Cristian D. Batista, Neil Harrison, Ross D. McDonald, Laurel E. Winter, B. J. Ramshaw, Mun K. Chan, Fedor F. Balakirev, Bertram Batlogg, Eric D. Bauer and Filip Ronning *Emergent magnetic anisotropy in the cubic heavy-fermion metal $CeIn_3$* **NPJ Quantum Materials** 46 (2017).

Y. Kasahara, Y. Takeuchi, R.H. Zadik, Y. Takabayashi, R.H. Colman, R.D. McDonald, M. J. Rosseinsky, K. Prassides & Y. Iwasa *Upper critical field reaches 90 Tesla near the Mott transition in fulleride superconductors* **Nature Communications** 8, 14467 (2017).

Jaime, M; Saul, A; Salamon, M; Zapf, VS; Harrison, N; Durakiewicz, T; Lashley, JC; Andersson, DA; Stanek, CR; Smith, JL; and Gofryk, K. *Piezomagnetism and magnetoelastic memory in uranium dioxide* **Nature Communications** 8, 99 (2017).

Wolgast, S; Eo, YS; Sun, K; Kurdak, C; Balakirev, FF; Jaime, M; Kim, DJ; and Fisk, Z. *Reduction of the low-temperature bulk gap in samarium hexaboride under high magnetic fields* **Physical Review B** 95, 245112 (2017).

Clune, A. J., Hughley, K. D., Lee, C., Abhyankar, N., Ding, X., Dalal, N. S., Whangbo, M.-H., Singelton, J., and Musfeldt, J. L. *Magnetic field-temperature phase diagram of multi-ferroic $[(CH_3)_2NH_2]Mn(HCOO)_3$* **Physical Review B** 96, 104424 (2017).

Brambleby, J.; Goddard, P.A.; Singleton, J.; Jaime, M.; Lancaster, T.; Huang, L.; Wosnitza, J.; Topping, C.V.; Carreiro, K.E.; Tran, H.E.; Manson, Z.E. and Manson, J.L. *Adiabatic Physics of an Exchange-coupled Spin-dimer System: Magnetocaloric Effect, Zero-point Fluctuations, and Possible Two-dimensional Universal Behavior* **Physical Review B** 95 (2), 024404 (2017).

Brambleby, J.; Manson, J.L.; Goddard, P.A.; Stone, M.B.; Johnson, R.D.; Manuel, P.; Villa, J.A.; Brown, C.M.; Lu, H.; Chikara, S.; Zapf, V.; Lapidus, S.H.; Scatena, R.; Macchi, P.; Chen, Y.-S.; Wu, L.-C, and Singleton, J. *Combining Microscopic and Macroscopic Probes to Untangle the Single-Ion Anisotropy and Exchange Energies in an $S = 1$ Quantum Antiferromagnet* **Physical Review B** 95, 134435 (2017).

Zhu, Z., McDonald, R. D., Shekhter, A., Ramshaw, B. J., Modic, K. A., Balakirev, F. F., Harrison, N *Magnetic Field Tuning of an Excitonic Insulator Between the Weak and Strong Coupling Regimes in Quantum Limit Graphite* **Scientific Reports** Vol. 7, 1733, (2017).

2016

Nicholas P. Breznay, Ian M. Hayes, B. J. Ramshaw, Ross D. McDonald, Yoshiharu Krockenberger, Ai Ikeda, Hiroshi Irie, Hideki Yamamoto, and James G. Analytis *Shubnikov-de Haas quantum oscillations reveal a reconstructed Fermi surface near optimal doping in a thin film of the cuprate superconductor $Pr_{1.86}Ce_{0.14}CuO_{4\pm\delta}$* **Physical Review B** 94, 104514 (2016).

Ian M. Hayes, Ross D. McDonald, Nicholas P. Breznay, Toni Helm, Philip J.W. Moll, MarkWartenbe, Arkady Shekhter and James G. Analytis *Scaling between magnetic field and temperature in the high-temperature superconductor $BaFe_2(As_{1-x}P_x)_2$* **Nature Physics** 3773, (2016).

Chan, M. K., Harrison, N. McDonald, R. D., Ramshaw, B. J., Modic, K. A., Barisic, N., Greven *Single Reconstructed Fermi Surface Pocket in an Underdoped Single-Layer Cuprate Superconductor* **Nature Communications** Vol. 7, 12244, (2016).

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Zuocheng Zhang, Wei Wei, Fangyuan Yang, Zengwei Zhu, Minghua Guo, Yang Feng, Dejing Yu, Mengyu Yao, Neil Harrison, Ross McDonald, Yuanbo Zhang, Dandan Guan, Dong Qian, Jinfeng Jia, and Yayu Wang *Zeeman effect of the topological surface states revealed by quantum oscillations up to 91 Tesla* **Physical Review B** 92, 235402 (2015).

Ramshaw, B. J., Sebastian, S. E., McDonald, R. D., Day, J., Tan, B. S., Zhu, Z., Betts, J. B., Liang, R.X., Bonn, D. A., Hardy, W. N., et. al. *Quasiparticle Mass Enhancement Approaching Optimal Doping in a High- T_c Superconductor* **Science** 348, 6232, 317-320 (2015).

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Moll, P. J. W., Zeng, B., Balicas, L., Galeski, S., Balakirev, F. F., Bauer, E. D., Ronning, F. *Field-Induced Density Wave in the Heavy-Fermion Compound $CeRhIn_5$* **Nature Commun.** 6, 6663 (2015).

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Sebastian, S. E., Harrison, N., Lonzarich, G. G. *Towards Resolution of the Fermi Surface in Underdoped High- T_c Superconductors* **Reports On Progress In Physics**, Vol. 75, I. 10, 102501 (2012).

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Tarantini, C., Gurevich, A., Jaroszynski, J., et al. *Significant Enhancement of Upper Critical Fields by Doping and Strain in Iron-Based Superconductors* **Physical Review B** Vol. 84 (18), 184522 (2011).

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Sebastian, S. E., Harrison, N., Goddard, P. A., et al. *Compensated Electron and Hole Pockets in an Underdoped High- T_c Superconductor* **Physical Review B** Vol. 81 (21), 214524 (2010).

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