



- ing cuprates thin films? *Mater. Sci. Eng. B* 60(3), 205 (1999)
5. Y. K. Yoo, F. Duewer, H. Yang, D. Yi, J. W. Li, and X. D. Xiang, Room-temperature electronic phase transitions in the continuous phase diagrams of perovskite manganites, *Nature* 406(6797), 704 (2000)
 6. G. Logvenov, I. Sveklo, and I. Bozovic, Combinatorial molecular beam epitaxy of $\text{La}_{2-x}\text{Sr}_x\text{CuO}_{4+\delta}$, *Physica C* 460–462(part 1), 416 (2007)
 7. W. Wong-Ng, M. Otani, I. Levin, P. Schenck, Z. Yang, G. Liu, L. P. Cook, R. Feenstra, W. Zhang, and M. W. Rupich, A phase relation study of Ba–Y–Cu–O coated-conductor films using the combinatorial approach, *Appl. Phys. Lett.* 94(17), 171910 (2009)
 8. M. Saadat, A. E. George, and K. C. Hewitt, Densely mapping the phase diagram of cuprate superconductors using a spatial composition spread approach, *Physica C* 470(1), S59 (2010)
 9. P. A. Lee, N. Nagaosa, and X. G. Wen, Doping a Mott insulator: Physics of high-temperature superconductivity, *Rev. Mod. Phys.* 78(1), 17 (2006)
 10. N. P. Armitage, P. Fournier, and R. L. Greene, Progress and perspectives on electron-doped cuprates, *Rev. Mod. Phys.* 82(3), 2421 (2010)
 11. D. J. Scalapino, A common thread: The pairing interaction for unconventional superconductors, *Rev. Mod. Phys.* 84(4), 1383 (2012)
 12. B. Keimer, S. A. Kivelson, M. R. Norman, S. Uchida, and J. Zaanen, From quantum matter to high-temperature superconductivity in copper oxides, *Nature* 518(7538), 179 (2015)
 13. J. Yuan, Q. Chen, K. Jiang, Z. Feng, Z. Lin, H. Yu, G. He, J. Zhang, X. Jiang, X. Zhang, Y. Shi, Y. Zhang, M. Qin, Z. G. Cheng, N. Tamura, Y. Yang, T. Xiang, J. Hu, I. Takeuchi, K. Jin, and Z. Zhao, Scaling of the strange-metal scattering in unconventional superconductors, *Nature* 602(7897), 431 (2022)
 14. H. Yu, J. Yuan, B. Zhu, and K. Jin, Manipulating composition gradient in cuprate superconducting thin films, *Sci. China Phys. Mech. Astron.* 60(8), 087421 (2017)
 15. S. D. Chen, M. Hashimoto, Y. He, D. Song, K. J. Xu, J. F. He, T. P. Devereaux, H. Eisaki, D. H. Lu, J. Zaanen, and Z. X. Shen, Incoherent strange metal sharply bounded by a critical doping in Bi2212 , *Science* 366(6469), 1099 (2019)
 16. I. M. Vishik, M. Hashimoto, R. H. He, W. S. Lee, F. Schmitt, D. Lu, R. G. Moore, C. Zhang, W. Meevasana, T. Sasagawa, S. Uchida, K. Fujita, S. Ishida, M. Ishikado, Y. Yoshida, H. Eisaki, Z. Hussain, T. P. Devereaux, and Z. X. Shen, Phase competition in trisected superconducting dome, *Proc. Natl. Acad. Sci. USA* 109(45), 18332 (2012)
 17. S. A. Kivelson, E. Fradkin, and V. J. Emery, Electronic liquid-crystal phases of a doped Mott insulator, *Nature* 393(6685), 550 (1998)
 18. W. S. Lee, K. J. Zhou, M. Hepting, J. Li, A. Nag, A. C. Walters, M. Garcia-Fernandez, H. C. Robarts, M. Hashimoto, H. Lu, B. Nosarzewski, D. Song, H. Eisaki, Z. X. Shen, B. Moritz, J. Zaanen, and T. P. Devereaux, Spectroscopic fingerprint of charge order melting driven by quantum fluctuations in a cuprate, *Nat. Phys.* 17(1), 53 (2021)