

Semiconductor based quantum light sources

Epitaxial semiconductor quantum dots represent one of the best light sources for long-haul quantum communication systems. This talk will highlight the long way towards current state-of-the-art focusing on entangled photon sources with high fidelity and high yield [1], high indistinguishability [2], and world record repetition rates of 400MHz [3]. The quantum dot quantum light sources are scalable and integratable on Si [4] and offer exciting perspectives towards future quantum information technologies.

[1] R. Keil, M. Zopf, Y. Chen, B. Höfer, J. Zhang, F. Ding, O. G. Schmidt, Nature Commun. 8, 15501 (2017)

[2] D. Huber, M. Reindl, Y. Huo, H. Huang, J. S. Wildmann, O. G. Schmidt, A. Rastelli, R. Trotta, Nature Commun. 8, 15506 (2017)

[3] J. Zhang, J. S. Wildmann, F. Ding, R. Trotta, Y. Huo, E. Zallo, D. Huber, A. Rastelli, O. G. Schmidt, Nature Commun. 6, 10067 (2015)

[4] Y. Chen, J. Zhang, M. Zopf, K. Jung, Y. Zhang, R. Keil, F. Ding, O. G. Schmidt, Nature Commun. 7, 10387 (2016)