

19. Solli, D. R., Ropers, C., Koonath, P. & Jalali, B. Optical rogue waves. *Nature* **450**, 1054–1057 (2007).
20. Dudley, J. M., Genty, G. & Eggleton, B. J. Harnessing and control of optical rogue waves in supercontinuum generation. *Opt. Express* **16**, 3644–3651 (2008).
21. Kasparian, J., B ejot, P., Wolf, J.-P. & Dudley, J. M. Optical rogue wave statistics in laser filamentation. *Opt. Express* **17**, 12070–12075 (2009).
22. Bosco, A. K. D., Wolfersberger, D. & Sciamanna, M. Extreme events in time-delayed nonlinear optics. *Opt. Lett.* **38**, 703–705 (2013).
23. Marsal, N., Caulet, V., Wolfersberger, D. & Sciamanna, M. Spatial rogue waves in a photorefractive pattern-forming system. *Opt. Lett.* **39**, 3690–3693 (2014).
24. Picozzi, A. *et al.* Optical wave turbulence: Towards a unified nonequilibrium thermodynamic formulation of statistical nonlinear optics. *Phys. Rep.* **504**, 1–132 (2014).
25. Hammani, K., Kibler, B., Finot, C. & Picozzi, A. Emergence of rogue waves from optical turbulence. *Phys. Lett. A* **374**, 3585–3589 (2010).
26. Onorato, M., Residori, S., Bortolozzo, U., Montina, A. & Arecchi, F. Rogue waves and their generating mechanisms in different physical contexts. *Phys. Rep.* **528**, 47–89 (2013).
27. Bonatto, C. *et al.* Deterministic optical rogue waves. *Phys. Rev. Lett.* **107**, 053901 (2011).
28. Baronio, F., Degasperis, A., Conforti, M. & Wabnitz, S. Solutions of the vector nonlinear Schr odinger equations: Evidence for deterministic rogue waves. *Phys. Rev. Lett.* **109**, 044102 (2012).
29. St ockmann, H. J. *Quantum Chaos: An Introduction* (Cambridge Univ. Press, 2007).
30. Sandtke, M. *et al.* Novel instrument for surface plasmon polariton tracking in space and time. *Rev. Sci. Instrum.* **79**, 013704 (2008).
31. Berry, M. V. A note on superoscillations associated with Bessel beams. *J. Opt.* **15**, 044006 (2013).
32. Liu, C. *et al.* Enhanced energy storage in chaotic optical resonators. *Nature Photon.* **7**, 473–478 (2013).
33. Dysthe, K., Krogstad, H. E. & M uller, P. Oceanic rogue waves. *Annu. Rev. Fluid Mech.* **40**, 287–310 (2008).
34. Redding, B., Liew, S. F., Sarma, R. & Cao, H. Compact spectrometer based on a disordered photonic chip. *Nature Photon.* **7**, 746–751 (2013).
35. Cohen, S. D., de S. Cavalcante, H. L. D. & Gauthier, D. J. Subwavelength position sensing using nonlinear feedback and wave chaos. *Phys. Rev. Lett.* **107**, 254103 (2011).
36. Conti, C., Leonetti, M., Fratallocchi, A., Angelani, L. & Ruocco, G. Condensation in disordered lasers: Theory, simulations, and experiments. *Phys. Rev. Lett.* **101**, 143901 (2008).
37. Cahill, B. G. & Lewis, A. W. *Resource Variability and Extreme Wave Conditions at the Atlantic Marine Energy Test Site 17–19* (4th International Conference on Ocean Energy (ICOE), 2011).
38. Vergeles, S. & Turitsyn, S. K. Optical rogue waves in telecommunication data streams. *Phys. Rev. A* **83**, 061801 (2011).
39. Hauer, J., Demeure, C. & Scharf, L. Initial results in Prony analysis of power system response signals. *IEEE Trans. Power Syst.* **5**, 80–89 (1990).
40. Tjihuis, A. G. *Electromagnetic Inverse Profiling, Theory and Numerical Implementation* (VNU Science Press, 1987).
41. Falco, A. D., Krauss, T. F. & Fratallocchi, A. Lifetime statistics of quantum chaos studied by a multiscale analysis. *Appl. Phys. Lett.* **100**, 184101 (2012).
42. Rotenberg, N. & Kuipers, L. Mapping nanoscale light fields. *Nature Photon.* **8**, 919–926 (2014).

Acknowledgements

For the computer time, we used the resources of the KAUST Supercomputing Laboratory and the Red Dragon cluster of the Primalight group. This work is part of the research program of Kaust ‘Optics and plasmonics for efficient energy harvesting’ and the Foundation for Fundamental Research on Matter (FOM), which is part of the Netherlands Organisation for Scientific Research (NWO). This work is supported by Kaust (Award No. CRG-1-2012-FRA-005), by NanoNextNL of the Dutch ministry EL&I and 130 partners and by the EU FET project ‘SPANGL4Q’.

Author contributions

A.F. initiated the work and developed the theoretical model for the controlled formation of rogue waves. C.L. performed FDTD simulations. R.E.C.v.d.W., N.R., and L.K. realized NSOM measurements. A.D.F. fabricated samples used in experiments. All authors contributed equally in the analysis and interpretation of experimental results. All authors contributed to writing the manuscript.

Additional information

Supplementary information is available in the online version of the paper. Reprints and permissions information is available online at www.nature.com/reprints. Correspondence and requests for materials should be addressed to A.F.

Competing financial interests

The authors declare no competing financial interests.

ERRATUM

Visualization of geometric influences on proximity effects in heterogeneous superconductor thin films

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Nature Physics **8**, 464–469 (2012); published online 15 April 2012; corrected after print 16 March 2015.

In the version of this Letter originally published the article number in reference 6 contained a typographical error and should have read 247003. This has now been corrected in the online versions of the Letter.