

# CV

## Han Yu

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## Current position

2022-      Warwick Zeeman Lecturer, University of Warwick, UK

## Previous positions

2019:2022      Research Associate, University of Cambridge/ Fellow at Corpus Christi College

## Fellowship/Award

2021      Certificates of Commendation: EMS PhD Thesis Prizes  
2020      LMS scheme 3 online lectures grant  
2017      Research Fellow, Mittag-Leffler Institut, Sweden

## Education

2016:2019      PhD in Pure Mathematics, University of St Andrews, UK  
                    Thesis title: Assouad type dimensions and dimension spectra  
                    Supervisors: Jonathan Fraser and Mike Todd  
2015      PhD Candidate in Pure Mathematics, University of Manchester, UK  
2012:2014      MSc in Theoretical and Mathematical Physics, Ludwig-Maximillan University, Munich,  
                    Germany  
2008:2012      UNDERGRADUATE DEGREE in Optical Engineering, Zhejiang University, China

## Teaching Experience

### Courses

MA426 Elliptic Curves, University of Warwick, 2021-2022 term 2

Graduate course: Fractal Geometry, University of Cambridge, Lent Term 2021

Corpus Bridging Course in mathematics, 2021

LMS scheme 3 online lecture series: Ergodic Theory, 2020

### Conferences/Talks

2022.10	Mathematics Seminar, University of Chongqing, China
2022.10	Mathematics Seminar, Shenzhen Technology University, China
2022.05	Workshop on affine and overlapping iterated function systems 2022, Bristol, UK
2022.03	Colloquium, University of Nevada, Reno, US
2022.02	Warwick Number Theory seminar, UK
2021.10	University of St Andrews, Analysis Seminar.
2021.05	University of Vienna, Dynamics Seminar.
2021.04	New England Dynamics and Number Theory Seminar (online)
2021.04	Mathematics Seminar, University of Chongqing, China
2020.11	Diophantine approximation and dynamics on homogeneous spaces webinar(online).
2020.05	Ergodic Theory and Dynamical Systems Seminar, University of Warwick
2020.05	One day ergodic meeting(online), UK
2020.04	The Centre de recherches mathématiques, research seminar, Canada.
2019.10	Analysis Seminar, University of Manchester
2019.03	Number Theory and Dynamics Conference, Cambridge
2018.09	Fractal Geometry and Stochastics 6, international conference, Germany
2017.10	Mittag-Leffler Institut, research program, Sweden - Invited research presentation

# Preprints and Publications

Publications (accepted):

- 33 (with D. Allen and S. Chow) Dyadic Approximation in the Middle-Third Cantor Set, (To appear) **Sel. Math. New Ser.**, arXiv:2005.09300
- 32 On the metric theory of multiplicative Diophantine approximation, (To appear) **J. d'Analyse Math.**, arXiv:2010.09004
- 31 (With K. Hambrook) Non-Salem sets in metric Diophantine approximation, (to appear) **International Mathematics Research Notices**, arXiv:2109.11332
- 30 Times two, three, five orbits on  $T^2$ , (To appear), **Adv. Math.**, arXiv:2009.00441
- 29 Bernoulli convolutions with Garsia parameters in  $(1, \sqrt{2}]$  have continuous density functions, (To appear), **Proceedings of the American Mathematical Society**, arXiv:2108.01008
- 28 Fractal projections with an application in number theory, (To appear) **Ergodic Theory and Dynamical Systems**, arXiv:2004.05924
- 27 (with J. Fraser, L. Lee and I. Morris)  $L^q$ -spectra of self-affine measures: closed forms, counterexamples, and split binomial sums, **Nonlinearity** (2021) 34, 6331.
- 26 (with H-P Chen and J. Fraser) Dimensions of the popcorn graph, (To appear), **Proceedings of the American Mathematical Society**, arXiv:2007.08407
- 25 (With J. Fraser) Approximate arithmetic structure in large sets of integers (To appear) **Real Analysis Exchange**, arxiv:arXiv:1905.05034
- 24 (With Pablo Shmerkin) On sets containing a unit distance in every direction, (To appear), **Discrete Analysis**, arxiv:1912.01523
- 23 An improvement on Furstenberg's intersection problem, (To appear), **Transactions of the American mathematical Society**, arXiv:1811.11073
- 22 (With S. Burrell) Digit expansions of numbers in different bases, **Journal of Number theory**, 226, (2021), 284-306.
- 21 On the metric theory of inhomogeneous Diophantine approximation: An Erdős-Vaaler type result, **Journal of Number Theory**, 224, 2021, 243-273.
- 20 Additive properties of numbers with restricted digits, (To appear), **Algebra and Number Theory**, arXiv:2004.05926
- 19 (with P. Varjú) Fourier decay of self-similar measures and self-similar sets of uniqueness, (To appear), **Analysis and PDE**, arXiv:2004.09358
- 18 Bernoulli decomposition and arithmetical independence between sequences, **Ergodic Theory and Dynamical Systems**, 41(5), 2021, 1590-1600

- 17 Weak tangents and level sets of Takagi functions, **Monatshefte für Mathematik**, 192, (2020), 249–264.
- 16 (with J. Fraser, D. Howroyd and A. Käenmäki) On the Hausdorff dimension of microsets, **Proceedings of the American Mathematical Society**, 147(11), (2019), 4921–4936.
- 15 Multi-rotations on the unit circle, **Journal of Number Theory**, 200, (2019), 316–328.
- 14 On GILP’s group theoretic approach to Falconer’s distance problem, **Glasgow Journal of Mathematics**, doi.org/10.1017/S0017089520000373
- 13 Cube packings in Euclidean spaces, **Mathematika**, 67(2), (2021), 288–295.
- 12 (with J. Fraser and D. Howroyd) Dimension growth for iterated sumsets, **Mathematische Zeitschrift**, 293, (2019), 1015–1042.
- 11 Dimensions of triangle sets, **Mathematika**, 65(2), (2019), 311–332.
- 10 A Fourier analytic approach to inhomogeneous Diophantine approximation, **Acta Arithmetica**, 190, (2019), 263–292.
- 9 (With J. Fraser, K.E.Hare, K.G.Hare and S.Troscheit) The Assouad spectrum and the quasi-Assouad dimension: a tale of two spectra, **Annales Academiæ Scientiarum Fennicæ Mathematica**, 44, (2019), 379–387.
- 8 Erdős Semi-groups, arithmetic progressions and Szemerédi’s theorem, (To appear) **Real Analysis Exchange**, arXiv:1802.04137
- 7 (with J. Fraser) Assouad type spectra for some fractal families, **Indiana University Mathematics Journal**, 67(5), 2018, 2005–2043.
- 6 (with J. Fraser) New dimension spectra: finer information on scaling and homogeneity, **Advances in Mathematics**, 329, (2018), 273–328.
- 5 (with D. Howroyd) Assouad dimension of random processes, **Proceedings of the Edinburgh Mathematical Society**, 62(1), (2019), 281–290.
- 4 (with J. Fraser and K. Saito) Dimensions of sets which uniformly avoid arithmetic progressions, **International Mathematics Research Notices**, 2019(14), (2019), 4419–4430.
- 3 (with S. Baker) Root sets of polynomials and power series with finite choices of coefficients, **Computational methods and Function theory**, 18, (2017), 89–97
- 2 (with J. Fraser) Arithmetic patches, weak tangents, and dimension, **Bulletin of the London Mathematical Society**, 50, (2018), 85–95.
- 1 On generalized trigonometric functions and series of rational functions, **Journal of Number Theory**, 180, (2017), 512–532.

Preprints: available on arXiv

- 2 (With B. Bárány and A. Käenmäki) Finer geometry of planar self-affine sets, arXiv:2107.00983
- 1 Rational points near self-similar sets, arXiv:2101.05910