

Curriculum Vitae

Alex Rutar

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Personal Information

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| Institution | University of St Andrews |
| Email | alex@rutar.org |
| Website | https://rutar.org |
| Citizenship | Canadian |
| Languages | English (native), French (reading) |

Education

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| 2020- | PhD in Mathematics, <i>University of St Andrews, St Andrews, UK</i> Advisors: Jonathan Fraser and Kenneth Falconer |
| 2016-2020 | Bachelor of Mathematics, <i>University of Waterloo, Waterloo, ON</i> Major: Pure Mathematics, Minor: Combinatorics and Optimization GPA: 95.7/100 |
| Fall 2018 | Exchange, <i>Budapest Semesters in Mathematics, Budapest</i> Magna Cum Laude GPA: 4.0/4.0 |
| 2012-2016 | Secondary School, <i>Tempo School, Edmonton, AB</i> Advanced Placement National Scholar GPA: 99/100 |

Funding

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| 2020 | £15,285 | EPSRC Doctoral Funding |
| 2019 | \$4,500 | NSERC Undergraduate Research Award |
| 2018 | \$4,500 | NSERC Undergraduate Research Award |

Scholarships and Awards

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| 2020 | £73,000 | Hansel Scholarship , <i>University of St Andrews</i> |
| 2020 | \$1,000 | Pure Math Undergraduate Research Prize , <i>University of Waterloo</i> |
| 2016 | \$20,000 | W. T. Tutte National Scholarship , <i>University of Waterloo</i> |
| 2016 | \$5,000 | President's Scholarship , <i>University of Waterloo</i> |
| 2016 | \$2,500 | Rutherford Scholarship , <i>Government of Alberta</i> |
| 2016 | \$0 | Governor General Bronze , <i>Tempo School</i> |

Publications

1. K. E. Hare, A. Rutar. Local Dimensions of Self-similar Measures Satisfying the Finite Neighbour Condition. [*arXiv:2101.07400*](#) (submitted).
2. A. Rutar. Geometric and Combinatorial Properties of Self-similar Multifractal Measures. [*arXiv:2008.00197*](#) (submitted).
3. K. E. Hare, K. G. Hare, A. Rutar. When the Weak Separation Condition implies the Generalized Finite Type Condition. *Proc. Amer. Math. Soc.* (to appear).

Conferences and Presentations

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| Oct. 2020 | St Andrews Analysis Seminar: <i>Multifractal Analysis for Self-Similar Measures with Exact Overlaps</i> |
| Feb. 2020 | Waterloo Analysis Seminar: <i>Geometric and Combinatorial Separation Conditions for Iterated Function Systems</i> |
| Jul. 2019 | CUMC 2019: <i>An Algebraic Proof of Quadratic Reciprocity</i> |
| Jul. 2018 | CUMC 2018: <i>Pisot–Vijayaraghavan numbers</i> |

Other Skills

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| \LaTeX | typesetting and package development |
| Python | software development, numerical computation, symbolic computation, graphical tools |
| Mathematica | functional programming, algorithm implementation for research papers |