

## Curriculum Vitae – Gergő Nemes

### PERSONAL DETAILS

**Name:** Gergő Nemes  
**Nationality:** Hungarian  
**Address:** Alfréd Rényi Institute of Mathematics  
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H-1053, Budapest  
Hungary  
**E-mail:** [nemes.gergo@renyi.hu](mailto:nemes.gergo@renyi.hu)  
**Homepage:** <http://www.renyi.hu/~gergonemes>  
**Date of Birth:** 6 December 1988

### EDUCATION

**2012 – 2015** Ph.D. in Mathematics (Summa Cum Laude)  
*Central European University, Budapest*

**2014** Visiting Research Student  
*The University of Edinburgh, Edinburgh*

**2010 – 2012** M.Sc. in Mathematics (with Honours)  
*Loránd Eötvös University, Budapest*

**2007 – 2010** B.Sc. in Mathematics (with Distinction)  
*Loránd Eötvös University, Budapest*

### EMPLOYMENT

**October 2021 – Present** JSPS Postdoctoral Research Fellow  
*Tokyo Metropolitan University, Hachioji*

**October 2021 – Present** Research Fellow (on leave)  
*Alfréd Rényi Institute of Mathematics, Budapest*

**December 2018 – September 2021** Premium Postdoctoral Research Fellow  
*Alfréd Rényi Institute of Mathematics, Budapest*

**September 2018 – November 2018** JSPS Postdoctoral Research Fellow  
*Kindai University, Higashi-Ōsaka*

**September 2015 – August 2018** Postdoctoral Research Associate  
*The University of Edinburgh, Edinburgh*

**August 2015** Research Assistant  
*Alfréd Rényi Institute of Mathematics, Budapest*

### RESEARCH INTEREST

Asymptotic Analysis, Écalle Theory, Exact WKB Analysis, Special Functions

INVITED TALKS

- June 2022** The 16th International Symposium on Orthogonal Polynomials, Special Functions and Applications (online)
- December 2021** 2021 Canadian Mathematical Society Winter Meeting (online)
- April 2021** Applicable Resurgent Asymptotics: Towards a Universal Theory  
*Isaac Newton Institute for Mathematical Sciences, Cambridge*
- November 2019** Microlocal Analysis and Asymptotic Analysis  
*RIMS, Kyoto University, Kyoto*
- August 2019** First Analysis Mathematica International Conference  
*Alfréd Rényi Institute of Mathematics, Budapest*
- April 2019** Asymptotic Analysis and Special Functions  
*The University of Edinburgh, Edinburgh*
- October 2018** Various Problems of Algebraic Analysis  
– Microlocal Analysis and Asymptotic Analysis –  
*RIMS, Kyoto University, Kyoto*
- June 2017** International Conference on Special Functions:  
Theory, Computation, and Applications 2017  
*City University of Hong Kong, Hong Kong*
- May 2017** Applied and Computational Complex Analysis  
*International Centre for Mathematical Sciences, Edinburgh*
- June 2015** The 13th International Symposium on Orthogonal Polynomials,  
Special Functions and Applications  
*National Institute of Standards and Technology, Gaithersburg*
- September 2014** Asymptotic Analysis Workshop  
*The University of Edinburgh, Edinburgh*

CONTRIBUTED TALKS

- June 2021** The 8th European Congress of Mathematics  
*Portorož*
- July 2019** The 15th International Symposium on Orthogonal Polynomials,  
Special Functions and Applications  
*RISC, Johannes Kepler University, Hagenberg*
- July 2017** The 14th International Symposium on Orthogonal Polynomials,  
Special Functions and Applications  
*University of Kent, Canterbury*
- April 2016** British Applied Mathematics Colloquium 2016  
*University of Oxford, Oxford*
- December 2014** International Conference on Applied Mathematics 2014  
*City University of Hong Kong, Hong Kong*

## AWARDS/FELLOWSHIPS

- 2022** Simons Fellowship, *The Simons Foundation*
- 2021** Róbert Bárány Prize, *Eötvös Loránd Research Network*
- 2020** JSPS Postdoctoral Fellowship (Standard), *Japan Society for the Promotion of Science*
- 2020** Junior Prima Prize, *Prima Primiissima Foundation/Hungarian Development Bank*
- 2018** Géza Grünwald Memorial Medal, *János Bolyai Mathematical Society*
- 2018** Premium Postdoctoral Fellowship, *Hungarian Academy of Sciences*
- 2018** Leverhulme Trust Early Career Fellowship, *The Leverhulme Trust* (declined)
- 2018** JSPS Postdoctoral Fellowship (Short-term), *Japan Society for the Promotion of Science*
- 2016** Best Dissertation Award, *Central European University*
- 2015** William Gordon Seggie Brown Fellowship, *The University of Edinburgh*
- 2015** Conference Participation Support Grant, *Hungary Initiatives Foundation*
- 2015** Student Travel Award, *Society for Industrial and Applied Mathematics*
- 2015** Award for Advanced Doctoral Students, *Central European University*
- 2014** Doctoral Research Support Grant, *Central European University*
- 2013** Pro Scientia Gold Medal, *National Scientific Student Council*
- 2012** Outstanding Student of the Faculty, *Loránd Eötvös University*
- 2011** Fellowship of the Hungarian Republic, *Republic of Hungary*

## LANGUAGES

Hungarian (mother tongue), English (fluent), Japanese (beginner)

## PROFESSIONAL ACTIVITIES

Analysis Mathematica	Editor
Journal of Mathematical Inequalities	Editor
NIST Digital Library of Mathematical Functions	Contributing Developer

## REVIEWER DUTIES

I have been a referee for papers submitted to the following journals:

- Acta Mathematica Hungarica
- Advances in Mathematics
- Analysis and Applications
- Analysis Mathematica
- Applied Mathematics and Computation
- Asymptotic Analysis
- Comptes Rendus Mathematique
- Journal of Approximation Theory
- Journal of Mathematical Analysis and Applications
- Journal of Mathematical Physics
- Journal of Number Theory
- Periodica Mathematica Hungarica
- Proceedings of the American Mathematical Society
- Proceedings of the Royal Society A
- Studies in Applied Mathematics
- The Ramanujan Journal

## COURSES TAUGHT

**2018** MATH10069 (Honours Algebra), *The University of Edinburgh*

**2015** MATH08063 (Several Variable Calculus and Differential Equations), *The University of Edinburgh*

**2014** Math 5003 (Introduction to Asymptotic Expansions), *Central European University*

## SUBMITTED MANUSCRIPTS

1. G. Nemes, Dingle's final main rule, Berry's transition, and Howls' conjecture

## PUBLICATIONS

2. W. Shi, G. Nemes, X.-S. Wang, R. Wong, Error bounds for the asymptotic expansions of the Hermite polynomials, *Proceedings of the Royal Society of Edinburgh, Section A: Mathematics*, online first
3. G. Nemes, Proofs of two conjectures on the real zeros of the cylinder and Airy functions, *SIAM Journal on Mathematical Analysis* **53** (2021), no. 4, 4328–4349. **MR4295047**
4. G. Nemes, On the Borel summability of WKB solutions of certain Schrödinger-type differential equations, *Journal of Approximation Theory* **265** (2021), Article 105562, 30 pp. **MR4226390**
5. Á. Baricz, G. Nemes, Asymptotic expansions for the radii of starlikeness of normalised Bessel functions, *Journal of Mathematical Analysis and Applications* **494** (2021), no. 2, Article 124624, 11 pp. **MR4154948**
6. G. Nemes, An extension of Laplace's method, *Constructive Approximation* **51** (2020), no. 2, 247–272. **MR4076110**
7. G. Nemes, A. B. Olde Daalhuis, Large-parameter asymptotic expansions for the Legendre and allied functions, *SIAM Journal on Mathematical Analysis* **52** (2020), no. 1, 437–470. **MR4057617**
8. G. Nemes, A. B. Olde Daalhuis, Asymptotic expansions for the incomplete gamma function in the transition regions, *Mathematics of Computation* **88** (2019), no. 318, 1805–1827. **MR3925486**
9. T. Bennett, C. J. Howls, G. Nemes, A. B. Olde Daalhuis, Globally exact asymptotics for integrals with arbitrary order saddles, *SIAM Journal on Mathematical Analysis* **50** (2018), no. 2, 2144–2177. **MR3787779**
10. G. Nemes, Error bounds for the large-argument asymptotic expansions of the Lommel and allied functions, *Studies in Applied Mathematics* **140** (2018), no. 4, 508–541. **MR3798335**
11. G. Nemes, Error bounds for the asymptotic expansion of the Hurwitz zeta function, *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences* **473** (2017), no. 2203, Article 20170363, 16 pp. **MR3685478**
12. G. Nemes, Error bounds for the large-argument asymptotic expansions of the Hankel and Bessel functions, *Acta Applicandae Mathematicae* **150** (2017), no. 1, 141–177. **MR3668093**

13. G. Nemes, A. B. Olde Daalhuis, Uniform asymptotic expansion for the incomplete beta function, *Symmetry, Integrability and Geometry: Methods and Applications* **12** (2016), Article 101, 5 pp. **MR3564460**
14. G. Nemes, The resurgence properties of the incomplete gamma function I, *Analysis and Applications* **14** (2016), no. 5, 631–677. **MR3530271**
15. G. Nemes, The resurgence properties of the Hankel and Bessel functions of nearly equal order and argument, *Mathematische Annalen* **363** (2015), no. 3, 1207–1263. **MR3412357**
16. G. Nemes, The resurgence properties of the incomplete gamma function II, *Studies in Applied Mathematics* **135** (2015), no. 1, 86–116. **MR3366821**
17. G. Nemes, Error bounds and exponential improvements for the asymptotic expansions of the gamma function and its reciprocal, *Proceedings of the Royal Society of Edinburgh: Section A Mathematics* **145** (2015), no. 3, 571–596. **MR3371568**
18. G. Nemes, On the large argument asymptotics of the Lommel function via Stieltjes transforms, *Asymptotic Analysis* **91** (2015), no. 3–4, 265–281. **MR3313459**
19. G. Nemes, Error bounds and exponential improvement for the asymptotic expansion of the Barnes  $G$ -function, *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences* **470** (2014), no. 2172, 14 pp. **MR3283510**
20. G. Nemes, The resurgence properties of the large order asymptotics of the Anger–Weber function II, *Journal of Classical Analysis* **4** (2014), no. 2, 121–147. **MR3324455**
21. G. Nemes, The resurgence properties of the large order asymptotics of the Anger–Weber function I, *Journal of Classical Analysis* **4** (2014), no. 1, 1–39. **MR3321137**
22. G. Nemes, The resurgence properties of the large-order asymptotics of the Hankel and Bessel functions, *Analysis and Applications* **12** (2014), no. 4, 403–462. **MR3218920**
23. G. Nemes, An explicit formula for the coefficients in Laplace’s method, *Constructive Approximation* **38** (2013), no. 3, 471–487. **MR3122279**
24. G. Nemes, Generalization of Binet’s Gamma function formulas, *Integral Transforms and Special Functions* **24** (2013), no. 8, 597–606. **MR3171976**
25. G. Nemes, Error bounds and exponential improvement for Hermite’s asymptotic expansion for the Gamma function, *Applicable Analysis and Discrete Mathematics* **7** (2013), no. 1, 161–179. **MR3086174**
26. G. Nemes, A solution to an open problem on Mathieu series posed by Hoorfar and Qi, *Acta Mathematica Vietnamica* **37** (2012), no. 3, 301–310. **MR3027223**
27. G. Nemes, A remark on some accurate estimates of  $\pi$ , *Journal of Mathematical Inequalities* **6** (2012), no. 4, 517–521. **MR3051909**
28. G. Nemes, Approximations for the higher order coefficients in an asymptotic expansion for the Gamma function, *Journal of Mathematical Analysis and Applications* **396** (2012), no. 1, 417–424. **MR2956975**
29. G. Nemes, Proofs of two conjectures on the Landau constants, *Journal of Mathematical Analysis and Applications* **388** (2012), no. 2, 838–844. **MR2869791**

30. A. Nemes, G. Nemes, A note on the Landau constants, *Applied Mathematics and Computation* **217** (2011), no. 21, 8543–8546. **MR2802265**
31. G. Nemes, An asymptotic expansion for the Bernoulli Numbers of the Second Kind, *Journal of Integer Sequences* **14** (2011), no. 4, Article 11.4.8, 6 pp. **MR2792164**
32. G. Nemes, On the coefficients of an asymptotic expansion related to Somos' Quadratic Recurrence Constant, *Applicable Analysis and Discrete Mathematics* **5** (2011), no. 1, 60–66. **MR2809034**
33. G. Nemes, More accurate approximations for the Gamma function, *Thai Journal of Mathematics* **9** (2011), no. 1, 21–28. **MR2833749**
34. G. Nemes, Asymptotic expansion for  $\log n!$  in terms of the reciprocal of a triangular number, *Acta Mathematica Hungarica* **129** (2010), no. 3, 254–262. **MR2737726**
35. G. Nemes, New asymptotic expansion for the Gamma function, *Archiv der Mathematik* **95** (2010), no. 2, 161–169. **MR2674252**
36. G. Nemes, On the coefficients of the asymptotic expansion of  $n!$ , *Journal of Integer Sequences* **13** (2010), no. 6, Article 10.6.6, 5 pp. **MR2659222**