Zoltán Péli

Curriculum Vitae

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Education

2015-2018 Ph.D. in Physicsal Sciences, University of Debrecen *summa cum laude*
Thesis: *Functional renormalization group for ordinary and ghost $O(N)$ models, with higher order gradient term*
Supervisor: Dr. Kornél Sailer

2013-2015 M.Sc. in Physics, University of Debrecen *graded with honour*
Thesis: *Particle in a Cavity in Finite Bandwidth Quantum Mechanics*
Supervisor: Dr. Kornél Sailer

2010-2013 B.Sc. in Physics, University of Debrecen
Thesis: *Finite bandwidth Quantum Mechanics*
Supervisor: Dr. Kornél Sailer

2006-2010 Pál Vasvári Secondary School, Nyíregyháza

Professional Career

2018-2022 Postdoctoral Research Fellow in the MTA-DE Particle Physics Research Group
2015-2018 Ph.D. student in the Particle Physics Doctoral School in the Universiry of Debrecen

Awards and scholarships

2017 Hungarian National Excellence Program
2015 Medallion of the Faculty of Science in the University of Debrecen

Schools attended

2021 ELFT Winter School, Physics beyond the Standard Model: Modern Approaches
01-05 February, Budapest
2020 GGI Lectures on the Theory of Fundamental Interactions 2020
07-24 January, Florence
2019 Summer school on BSM particle physics and cosmology

25-31 August, Ljubljana

Teaching experience

2020 Lecturer on Cosmological Inflation in Astroparticle Physics PhD course, participation in the making of the corresponding lecture notes, Eötvös Lorand University

2016 Tutor, Quantum Mechanics Advanced Course, University of Debrecen

2015 Tutor, Quantum Mechanics Beginner Course, University of Debrecen

Languages

Hungarian Native

English Fluent, B2 level certificate

German Basic, B1 level certificate

Computer Skills

Advanced Mathematica, Latex

Intermediate C

Basic C++, Python

Talks/Posters

2021 Particle physics model of inflation

Invited speaker, 2 hours lecture at ELFT Winter School

2020 Derivative expansion for computing critical exponents of $O(N)$ symmetric models at NNLO accuracy

Invited speaker, 45 minute talk at ELTE Seminars

2019 Particle physics model of curvaton inflation in a stable universe

Invited speaker, 45 minute talk at ELTE Seminars

2019 Stability of the Higgs-vacuum as constraint on $U(1)$ extensions of the Standard Model

Poster at the Summer school on BSM particle physics and cosmology, Ljubljana

2018 Stability of the Higgs-vacuum as constraint on $U(1)$ extensions of the Standard Model

Poster at 14th Vienna Central European Seminar, Vienna

2017 Effect of the quartic gradient terms on the critical exponents of the Wilson-Fisher fixed point in the $O(N)$ models

Talk at the Physicist Doctorands Conference (DOFFI), Balatonfenyves

2016 Analysis of the ghost $O(2)$ model

Talk at the Physicist Doctorands Conference (DOFFI), Balatonfenyves

Publications

[1] Z. Péli, I. Nándori, and Z. Trócsányi, Particle physics model of curvaton inflation in a stable universe, Phys. Rev. D 101, 063533 (2020)

[2] Z. Péli, S. Nagy, K. Sailer, Phase structure of the Euclidean three-dimensional $O(1)$ ghost model, Int.J.Mod.Phys. A34 no.02, 1950021 (2019)

[3] S. Nagy, B. Fazekas, Z. Péli, I. Steib, K. Sailer, Regulator dependence of fixed points in quantum Einstein gravity with R^2 truncation, Class.Quant.Grav. 35, no.5, 055001 (2018)

[4] Z. Péli, S. Nagy, K. Sailer, Effect of the quartic gradient terms on the critical exponents of the Wilson-Fisher fixed point in $O(N)$ models, Eur. Phys. J. A 54:20 (2018).

[5] Z. Péli, S. Nagy, K. Sailer, Phase structure of the $O(2)$ ghost model with higher-order gradient term, Phys. Rev. D 94, 065021 (2016), hep-th/1605.07836.

[6] Z. Péli, S. Nagy, K. Sailer, Triple point in the $O(2)$ ghost model with higher-order gradient term, Phys. Rev. D 94, 065037 (2016), hep-th/1608.02080.

[7] K. Sailer, Z. Péli, S. Nagy, Particle in a cavity in one-dimensional bandlimited quantum mechanics, J. Phys. A 48, 075305 (2015), hep-th/1410.0175.

[8] K. Sailer, Z. Péli, S. Nagy, Some consequences of the generalized uncertainty principle induced ultraviolet wave-vector cutoff in one-dimensional quantum mechanics, Phys. Rev. D 87, 084056 (2013), math-ph/1301.6913.