

Tamas Palmai – Curriculum Vitae

Contact information

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Current position

since 2016 Research Associate, Theory Group
Condensed Matter Physics and Materials Science Department
Brookhaven National Laboratory

Past experience

2014 – 2016 Post-doctoral research fellow
Statistical Field Theory Group, Hungarian Academy of Sciences (HAS)
and Budapest University of Technology and Economics (BME)
2015 Visiting researcher, SISSA, Trieste
2012 – 2014 Post-doctoral fellow, Statistical Physics Group
Scuola Internazionale Superiore di Studi Avanzati Trieste
2012 – 2014 Associated Visitor, Istituto Nazionale di Fisica Nucleare, Trieste Section
2011 – 2012 Research assistant, Dept. of Theoretical Physics, Eötvös University
2009 – 2012 PhD student and research assistant, Dept. of Theoretical Physics, BME
2008, 2009, 2012 Visiting researcher, Justus-Liebig-Universität, Giessen
2007 – 2012 Teaching assistant, BME

Education

2012 PhD in Physics, Department of Theoretical Physics, BUTE
2009 MSc in physics, BUTE (specialization: condensed matter physics)

Honors, Fellowships

2014 Postdoctoral Fellowship of Hungarian Academy of Sciences
2010, 2011 Travel Fellowship from the Foundation for the Students of BME
2009 1st Prize, National Student Research Conference, Hungary
2008 Scholarship of the Republic of Hungary
2008 Scholarship of the BME
2008 Scholarship of the Faculty of Natural Sciences BME

Main research achievements

- Nonperturbative numerical solution of QCD in $1+1$ dimension with nonzero quark masses, in particular determining low energy spectrum and finding both the fermionic (baryons) and bosonic (mesons, deuteron) stable particles, and exploring the phase diagram at nonzero density. [18]
- Determining the low-energy spectrum of certain nonintegrable field theories relevant in the description of e.g. bad metals using nonabelian bosonization and a truncated Hamiltonian approach based on Wess-Zumino-Novikov-Witten models. [16]
- Developing a systematic approach to find the Renyi entropies of arbitrary states in $1D$ field theories using the UV-limiting state of space and applying it to study excited state entanglement in critical chains. [14]

- Finding a physical mechanism for dynamical phase transitions that accounts for most of the observations in 1D. [17]
- Regularization of multi-soliton form factors in sine-Gordon model and explicitly verifying them using TCSA. [9,10,13]
- Proving some new relations for the distribution of real roots of Bessel functions. [6,12]
- Developing various new methods to find effective potentials governing collision experiments in nuclear and atomic physics in the framework of quantum mechanical inverse scattering theory. [4,8,11]

Conferences (selection)

2016	Workshop on Quantum Integrable Models in and out of Equilibrium, Cambridge
2015	599. WEH-Seminar: Isolated Quantum Many-Body Systems out of Equilibrium, Bad Honnef
2015	Quantum Transport in One Dimension, Dresden
2015	Beyond Integrability: The Mathematics and Physics of Integrability and its breaking in low-dimensional strong correlated quantum phenomena, Montreal
2014	9th Bologna workshop on CFT and Integrable models, Bologna
2014	Recent Advances on Quantum Integrable Systems, Dijon
2014	Conference on Non-equilibrium Phenomena in Condensed Matter and String Theory, Trieste
2012	Recent Advances on Quantum Integrable Systems, Dijon
2011	Applied Inverse Problems Conference, College Station, TX
2010	International Conference on Inverse Problems, Wuhan
2007	International Conference on Inverse Quantum Scattering Theory, Siófok (organizer and technical editor of proceedings)

Selected oral presentations

- *Studying the Perturbed Wess-Zumino-Novikov-Witten $SU(2)_k$ Theory Using the Truncated Conformal Spectrum Approach (poster)*,
Beyond Integrability, Montreal, July 15, 2015;
Quantum Transport in One Dimension, Dresden, September 15, 2015
- *Excited state entanglement in CFT: extensivity and the role of microscopic details*,
9th Bologna workshop on CFT and Integrable models, Bologna, September 19, 2014
- *Fixed energy potentials obtained as solutions of the classical inverse Sturm-Liouville problem*,
Applied Inverse Problems Conference, College Station, TX, May 25, 2011
- *Semi-analytic solution of the Cox-Thompson inverse scattering problem at fixed energy for special cases (invited talk)*,
International Conference on Inverse Quantum Scattering Theory, Siófok, August 28, 2007