Dániel Tüzes

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Education

Eötvös University, *Budapest, Hungary* **2012–2019**
PhD in Physics, summa cum laude, GPA 5.00 (scale: 1 to 5)
Materials science and condensed matter physics. Thesis: Stochastic properties of dislocation motion and rearrangement.

Friedrich Alexander University Nuremberg-Erlangen, *Nuremberg, Germany* **2015–2017**
Visiting research scientist

Eötvös University, *Budapest, Hungary* **2007–2012**
M.Sc. and B.Sc. in Physics, GPA 4.97 and 4.87 (scale: 1 to 5)
Atomic and molecular physics. Thesis: Determining polarization of dislocation ensembles.

Skills

- **Technical**: Expert level knowledge in modeling complex stochastic and deterministic systems with partial differential equations, model simplification with proper approximations, analysis of asymptotic behavior in small and infinite large systems. Gathering, evaluating and presenting real word noisy data. Expertise in maximum likelihood estimations, numeric PDE solving, equilibrium finding, linear stability analysis, Fourier-analysis, hypothesis testing and setting up different computational models.
- **Computer**: Advanced, practical knowledge in C++, used on a daily basis (classes, templates, lambdas, STL and other libraries). Intermediate level scripting practice in Gnuplot to visualize data and plot figures. Intermediate to advanced level in describing languages as LaTeX, Markdown and pandoc. Intermediate level scripting in bash, regular expressions and git, basic usage of Python. Basic level practice in HTML, PHP, MySQL and JS.
- **Language**: English (fluent), Hungarian (native), German (intermediate), French (elementary).

Experience

Eötvös University, *Budapest, Hungary* **2012–2019**
Friedrich Alexander University Nuremberg-Erlangen, *Nuremberg, Germany*
Teaching assistant, research assistant and lecturer
- Designed and implemented stochastic simulations using non-deterministic PDEs
- Improved the efficiency of existing simulations by a factor of 2 using mathematical identities, and by a factor of 5 eliminating cache mismatches; implemented a stochastic model on GPU
- Developed a sensitive way of investigating patterns on a 2D scalar field using Fourier-analysis
- Prepared fast, live data visualization and constructed educational material from scratch
- Initiated a new investigation topic in an international research group with an output of a PRB article
- Coded in C++ for different operating systems; used different compilers and options for different target systems and purposes; used STL intensively, along with industry-standard libraries, such as FFTW, LAPACK, Boost and CUDA; used classes, templates, lambdas
- Created scripts in gnuplot, producing informative and figures for data visualization
- Created documentations in LaTeX, pandoc and different flavors of Markdown
- Collaborated in an international and multicultural environment. Encouraged more involvement of research peers in research projects and social events

Franz-Fertig, *Buchen, Germany* **7.2019 – 9.2019**
Production leader and manager at Budapest based production site
- Restored the information technology system at Dunapol in Budapest after its breakdown under prior management
- Investigated the factory's technology and methods to infer working conditions prior the breakdown; measured damages
- Within two weeks, set up the original automated production management system, and by involving database specialist,

repaired the damaged data
- Coordinated cargo deliveries between the parent company and the subsidiary, managed the production workflow, coordinated employees and helped managing acquisitions and invoicing

Publications, talks and presentations

Peer reviwed journals

- Wu, RH; **Tüzes, D**; Ispanovity, PD; Groma, I; Hochrainer, T; Zaiser, M
  Instability of dislocation fluxes in a single slip: Deterministic and stochastic models of dislocation patterning
  PHYSICAL REVIEW B 98 : 5 Paper: 054110 , 15 p. (2018); arxiv PDF
- István, Hegyi Ádám; Dusán, Ispánovity Péter; Knapek, Michal; **Tüzes, Dániel**; Máthis, Krisztián; Chmelík, František; Dankházi, Zoltán; Varga, Gábor; Groma, István
  Micron-Scale Deformation: A Coupled In Situ Study of Strain Bursts and Acoustic Emission
  MICROSCOPY AND MICROANALYSIS 23 : 6 pp. 1076-1081. , 6 p. (2017); arxiv PDF
- **Tüzes, D**; Ispánovity, PD; Zaiser, M
  Disorder is good for you: the influence of local disorder on strain localization and ductility of strain softening materials
  INTERNATIONAL JOURNAL OF FRACTURE 205 : 2 pp. 139-150. , 12 p. (2017); arxiv PDF
- Ispánovity, PD; **Tüzes, D**; Szabó, P; Zaiser, M; Groma, I
  Role of weakest links and system-size scaling in multiscale modeling of stochastic plasticity
  PHYSICAL REVIEW B 95 : 5 Paper: 054108 , 13 p. (2017); arxiv PDF
- Groma, I; **Tüzes, D**; Ispánovity, PD
  Asymmetric X-ray line broadening caused by dislocation polarization induced by external load
  SCRIPTA MATERIALIA 68 : 9 pp. 755-758. , 4 p. (2013); early version PDF

Books, lecture notes (Hungarian)

- Analysis I - III: The official coursebook for physicists at Eötvös University, 173p, ISBN: 978-963-489-089-8
- Mechanics practice: short summary of the lecture notes and examples for calculation, 93p
- Continuum mechanics practice: Introduction to deformations and strains, and examples for calculation, 47p
- Quantum many body physics: A lecture note for MSc students. Lecturer: Gergely Szirmai and András Csordás, 26p

Took part in numerous prestigious international conferences and seminars, held presentations and introduced his research results using posters as well.

Scholarships and awards

2018–2019	two-year research scholarship (Hungarian Competitiveness and Excellence Program)
2017/2018	New Hungarian Excellence Program scholarship (Ministry of Human Capacities)
2016/2017	one-year research scholarship granted by Prof. Michael Zaiser
2015/2016	one-year PhD scholarship granted by BayHost
2012–2017	PhD scholarship granted by the Hungarian Ministry of Education
2011/2012	Excellence of Faculty (99.2th percentile)
2011/2012	Fellowship granted by the President of the Hungarian Republic (99.2th percentile)
2009/2010	Fellowship granted by the President of the Hungarian Republic (99.2th percentile)
2008	2nd place at Rudolf Ortvay International Competition in Physics

Community services and affiliations

2008 –	Organizer in the Dürer Competition in Mathematics, Physics and Chemistry A competition for secondary school students, and from 2017 mentor in the Hungarian team of the International Young Physicists Tournament
2008 –	Founder and maintainer of FizWeb, the largest lecture note, example, exercise and book sharing platform for physicists at Eötvös University
2008 –	Content manager and maintainer of numerous talent-related websites across Europe, like from 2013, the website of the Talent Center Budapest (EUTCB is founded to foster and coordinate the joint European talent support activities), until 2014, the (Hungarian) National Talent Support Council, from 2016, the European Council for High Ability and the European Talent Support Network
2007 – 2013	Developer, content manager and maintainer of LinkGroup, the homepage of a biochemistry and network oriented research group led by Péter Csermely
2007 – 2012	Member of Bolyai College, the elite college of the Science Faculty