

# Curriculum Vitae

Mgr. Rudolf Sýkora, Ph.D.

## Personal data

Current affiliation      Institute of Experimental and Applied Physics (IEAP)  
Czech Technical University in Prague

Telephone                office:    +420 2 2191 2760  
mobile:   +420 603 260 921

E-mail                    rudolf.sykora@cvut.cz

Date & place of birth    21<sup>st</sup> April 1978 (aged 43), Valašské Meziříčí, Czech Republic

## Education

1997–2003      master studies at Charles University in Prague, Faculty of Mathematics and Physics, study programme Physics, specialization Theoretical Physics, Astronomy and Astrophysics; master thesis title: *‘Theoretical study of the properties of macroscopic phases of the deconfined QCD matter in dependence upon the quantum numbers of the quark–quark condensates’* (supervisor: Dr. Jiří Hošek)

2003–2012      doctoral studies at Charles University in Prague, Faculty of Mathematics and Physics, study programme Physics, specialization Theoretical Physics, Astronomy and Astrophysics; doctoral thesis title: *‘Relativistic Theory of Electron Transport in Magnetic Layers’* (supervisor: doc. RNDr. Ilja Turek, DrSc., Department of Condensed Matter Physics)

## Employment

2005 – Comet System, Rožnov pod Radhoštěm (ČR); software development (in C and x86 assembler) for electronic thermo- and moisture- meters.

2007–2010 – Charles University in Prague (ČR), Faculty of Mathematics and Physics, Department of Condensed Matter Physics

2011 – Charles University in Prague (ČR), Faculty of Mathematics and Physics, Institute of Particle and Nuclear Physics; software development (mainly C++ and Python) for the ALFA subdetector of the ATLAS experiment at the LHC supercollider at CERN

2013–2015 – postdoc at VŠB – Technical University of Ostrava (ČR), Nanotechnology Centre

2016–2017 – postdoc at Charles University in Prague (ČR), Faculty of Mathematics and Physics, Department of Condensed Matter Physics

2018–present – research scientist at Czech Technical University in Prague (ČR), Institute of Experimental and Applied Physics (IEAP), Head of the Department of the Van de Graaff accelerator

## Fields of interests:

I am a theoretical physicist with a broad scope of interests. Although my main field till 2018 was condensed matter physics (ab-initio calculations of electronic structure and related topics), I have always followed particle (and to a lesser extent nuclear) physics as well. Lately, I have joined and coordinate a few nuclear experiments carried out at IEAP in Prague. One such, in which I am particularly involved, deploys the local Van de Graaff facility to reproduce anomalous results of the so called ATOMKI experiment, possibly pointing at physics beyond the standard model.

### Representative list of publications:

*Color superconductor with a color-sextet condensate*, T. Brauner, J. Hošek and R. Sýkora, Phys. Rev. D **68**, 094004 (2003)

*Transmission and reflection of spin-polarized electrons propagating through a model domain wall*, R. Sýkora and I. Turek, Acta Physica Polonica A, **113**, 15 (2008)

*Tunnelling anisotropic magnetoresistance of Fe/GaAs/Ag(001) junctions from first principles: effect of hybridized interface resonances*, R. Sýkora and I. Turek, Journal of Physics – Condensed Matter, **24**, 365801 (2012)

*Magnetic interactions in a quasi-one-dimensional antiferromagnet Cu(H<sub>2</sub>O)<sub>2</sub>(en)SO<sub>4</sub>*, R. Sýkora, D. Legut, JAP **115**, 17B305 (2014)

*Optical properties of a monoclinic insulator Cu(H<sub>2</sub>O)<sub>2</sub>(en)SO<sub>4</sub>*, R. Sýkora, K. Postava, D. Legut, and R. Tarasenko, Acta Phys. Polonica A **127**, 469 (2015)

*Calculated Reflection Coefficients of a Single Planar Interface with an Optically Biaxial Cu(en)(H<sub>2</sub>O)<sub>2</sub>SO<sub>4</sub> Material Compared to Experiment*, R. Sýkora, K. Postava, D. Legut, R. Tarasenko, Journal of Nanoscience and Nanotechnology **16**, 7818 (2016)

*Mechanical properties of non-centrosymmetric CePt<sub>3</sub>Si and CePt<sub>3</sub>B*, G. Rogl, D. Legut, R. Sýkora, P. Müller, H. Müller, E. Bauer, S. Puchegger, M. Zehetbauer and P. Rogl, J. Phys.: Condens. Matter **29**, 185402 (2017)

*Graph-theoretical evaluation of the inelastic propensity rules for molecules with destructive quantum interference*, R. Sýkora and T. Novotný J. Chem. Phys. **146**, 174114 (2017)

*Comment on “Is the Antiresonance in Meta-Contacted Benzene Due to the Destructive Superposition of Waves Traveling Two Different Routes around the Benzene Ring”*, R. Sýkora and T. Novotný, J. Phys. Chem. C, **121** (35), 19538 (2017)