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doc. RNDr. Přemysl Koloreň, Ph.D.

Education

2022, Charles University, Faculty of Mathematics and Physics

Habilitation in Theoretical Physics; thesis: *Electronic relaxation of low-energy metastable states*

2002 - 2005, Charles University, Faculty of Mathematics and Physics

Ph.D. in Theoretical Physics, Astronomy and Astrophysics; thesis: *Energy transfers in small molecules*

Oct - Dec 2004, Lehrstuhl für Theoretische Chemie, Universität Bonn

1997 - 2002, Charles University, Faculty of Mathematics and Physics

MSc. in Theoretical Physics; thesis: *Application of generalized R-matrix theory in molecular collisions*

Academic Experience

2022 - present

Associate Professor

Institute of Theoretical Physics, Faculty of Mathematics and Physics,
Charles University

2008 - 2022

Assistant Professor

Institute of Theoretical Physics, Faculty of Mathematics and Physics,
Charles University

Dec 2006 - Nov 2007

Alexander von Humboldt research Fellowship

Theoretische Chemie, Physikalisch-Chemisches Institute,
Universität Heidelberg

Jan 2006 - Nov 2006

Research scientist

Institute of Theoretical Physics, Faculty of Mathematics and Physics,
Charles University

Research Projects

2022 - 2024 GAČR 22-22658S

Multi-electron decay processes in polyatomic systems

role: principal investigator

2017 - 2019 GAČR 17-10866S

Properties of autoionizing states in atoms, molecules and clusters

role: principal investigator

2012 - 2015 GAČR P208-12-0521

Non-radiative relaxation processes in ionized atomic and molecular systems

role: principal investigator

2010 - 2014 GAČR P208/10/1281

Vibrational and dissociative dynamics of molecular systems in electronic continuum

role: team member

2009 - 2011 GAČR 202/09/0786

Dynamics of non-radiative inter-atomic decay processes in clusters

role: principal investigator

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Publications

- Number of publications: 53
- Number of citations (WoS, without self citations): 935
- *h*-index: 20
- ORCID 0000-0002-0747-4546

Selected papers

1. D Schwickert, M Ruberti, P Koloreň *et al*, *Electronic quantum coherence in glycine molecules probed with ultrashort X-ray pulses in real time*. Science Advances, 8(22):eabn6848, 2022.
2. T Barillot, O Alexander, B Cooper *et al*, *Correlation-driven transient hole dynamics resolved in space and time in the isopropanol molecule*. Phys. Rev. X, 11:031048, 2021.
3. P Koloreň and V Averbukh. *Fano-ADC(2,2) method for electronic decay rates*. J. Chem. Phys., 152(21):214107, 2020.
4. M A Khokhlova, B Cooper, K Ueda, K C Prince, P Koloreň, M Y Ivanov, and V Averbukh. *Molecular Auger Interferometry*. Phys. Rev. Lett., 122(23):233001, 2019.
5. T Miteva, S Kazandjian, P Koloreň, P Votavová, and N Sisourat. *Interatomic Coulombic Decay Mediated by Ultrafast Superexchange Energy Transfer*. Phys. Rev. Lett., 119(8):083403, 2017.
6. P Koloreň, V Averbukh, R Feifel, and J Eland. *Collective relaxation processes in atoms, molecules and clusters*. J. Phys. B, 49(8):082001, 2016.
7. R Feifel, J Eland, R Squibb, M Mucke, S Zagorodskikh, P Linusson, F Taranelli, P Koloreň, and V Averbukh. *Ultrafast molecular three-electron Auger decay*. Phys. Rev. Lett., 116:073001, 2016.
8. B Cooper, P Koloreň, L J Frasinski, V Averbukh, and J P Marangos. *Analysis of a measurement scheme for ultrafast hole dynamics by few femtosecond resolution x-ray pump-probe Auger spectroscopy*. Faraday Discussions, 171:93–111, 2014.
9. K Gokhberg, P Koloreň, A I Kuleff, and L S Cederbaum. *Site- and energy-selective slow-electron production through intermolecular Coulombic decay*. Nature, 505:661, 2014.
10. N Sisourat, N V Kryzhevoi, P Koloreň, S Scheit, T Jahnke, and L S Cederbaum. *Ultralong-range energy transfer by interatomic Coulombic decay in an extreme quantum system*. Nature Physics, 6(7):508–511, 2010.

Teaching

Present

- Thermodynamics and Statistical Physics
- Group Theory and its Applications in Physics

Past

- Physics for Mathematicians I & II
- Classical Electrodynamics (Tutorials)
- Applied Mathematics I-IV (Tutorials)

Other academic activities

- FYKOS – Correspondence Physics Competition