

Jiří Kvita

PARTICLE PHYSICIST · LECTURER

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Education

Institute of Particle and Nuclear Physics, Faculty of Mathematics and Physics, Charles University

Prague, Czech Republic

PHD IN PARTICLE PHYSICS

2009

- Experimental particle physics with the DØ experiment at Fermilab.
- Thesis: Measurement of Differential Spectra in the $t\bar{t} \rightarrow \ell + \text{jets}$ Channel at 1.96 TeV with the DØ Experiment at Fermilab

Institute of Particle and Nuclear Physics, Faculty of Mathematics and Physics, Charles University

Prague, Czech Republic

MASTER'S DEGREE IN PARTICLE AND NUCLEAR PHYSICS

2003

- Thesis: Effects of Top Quark and W Boson Finite Widths on the Measurement of the Top Quark Mass.

Skills

Physics

Unfolding in particle physics, data processing and analysis. Search for the top-antitop pairs production in proton-lead collisions with the ATLAS experiment. High energy cosmic rays, spectra and their composition. Techniques for signal and pattern recognition. Physics at the LHC: Data analysis and reduction in high energy physics with the ATLAS experiment in the Top quark and Standard model physics groups. Statistics applications, spectra correction and deconvolution, phenomenology of top quark physics within and beyond the Standard Model using private simulation.

Programming

C/C++, Python, bash, git, Linux, ROOT, MADGRAPH, DELPHES, L^AT_EX, HTML.

Languages

Czech, English, basic French.

Experience

Joint Laboratory of Optics, Faculty of Science, Palacký University

Olomouc, Czech Republic

RESEARCH ASSISTANT, PARTICLE AND ASTROPARTICLE PHYSICS SUBGROUP LEADER, LECTURER.

2014–

- Physics analysis with the ATLAS experiment, Palacký U ATLAS Deputy Team Leader.
- Member of the astroparticle physics collaboration FAST

Simon Fraser University, Burnaby, Canada

CERN

RESEARCH ASSISTANT AT THE ATLAS EXPERIMENT AT CERN

2011–2013

- In-situ jet energy scale determination, data analysis, $t\bar{t}$ spectra unfolding.

CERN

Genève, Switzerland

CERN RESEARCH FELLOW AT THE ATLAS EXPERIMENT AT CERN

2009–2011

- Tracking resolution and b -tagging performance, IBL studies, data analysis.

Fermi National Accelerator Laboratory

Batavia, IL, USA

FERMILAB STUDENT FELLOW AT THE DØ EXPERIMENT AT FERMILAB

2007–2008

- Jet ID group leader and responsible at the DØ experiment, data analysis, first top quark p_T spectrum measurement and unfolding.

Institute of Particle and Nuclear Physics, Faculty of Mathematics and Physics

Charles University, Prague

STUDENT, PHYSICIST, RESEARCHER AT THE DØ EXPERIMENT AT FERMILAB

2001–2010

- High energy physics, calorimeters calibration, jet energy scale determination.

International collaborations activities

INTERNATIONAL COLLABORATIONS

- Member and co-author of publications and conference results on behalf of the ATLAS collaboration, contact editor of ATLAS analyses, member and chair of Editorial Boards.
- Member of the FAST astroparticle collaboration., started participation in the HyperK collaboration.
- Previously member and co-author of DZero experiment results and internal notes.

Publications

Extending the Fully Bayesian Unfolding with Regularization Using a Combined Sampling Method

Petr Baroň, Jiří Kvita

CO-AUTHOR

Symmetry 2020, 12(12), 2100

Observing ultra-high energy cosmic rays with prototypes of the Fluorescence detector Array of Single-pixel Telescopes (FAST) in both hemispheres,

FAST Collaboration

CO-AUTHOR

PoS (ICRC2019) 259

<https://arxiv.org/abs/1908.02904>

Study of methods of resolved top quark reconstruction in semileptonic $t\bar{t}$ decay

Jiří Kvita

AUTHOR

Nucl. Inst. Meth. A vol. 900, 84-100 (2018).

Measurements of top-quark pair differential and double-differential cross-sections in the ℓ +jets channel with pp collisions at $\sqrt{s}=13$ TeV using the ATLAS detector

ATLAS Collaboration

CO-AUTHOR, DIRECT ANALYSIS CONTRIBUTION

Eur. Phys. J. C 79 (2019) 2018

<https://arxiv.org/abs/1908.07305>

Measurements of top-quark pair differential cross-sections in the lepton+jets channel in pp collisions at $\sqrt{s}=13$ TeV using the ATLAS detector

ATLAS Collaboration

EDITOR, CO-AUTHOR, DIRECT ANALYSIS CONTRIBUTOR

JHEP 11 (2017) 191

<https://arxiv.org/abs/1708.00727>

Conference contributions

Single- and double-differential cross-sections in $t\bar{t}$ final states in the lepton+jets channel

12th International Workshop on Top Quark Physics, Beijing, China

POSTER, ON BEHALF OF THE ATLAS COLLABORATION

22–27 Sep 2019.

Measurement of Minimum Bias Observables with the ATLAS detector

8th International Workshop on Multiple Partonic Interactions at the LHC, Saint Cristobal de las Casas, Mexico

TALK, ON BEHALF OF THE ATLAS COLLABORATION

28 Nov – 2 Dec 2016.

Top Physics Results

ATLAS Collaboration Week, New York, USA

TALK, ON BEHALF OF THE ATLAS COLLABORATION

25 June – 2 July 2016

Measurement of cross-sections and search for new physics in $t\bar{t}(+X)$ final states at ATLAS

CKM 2014, Vienna

TALK, ON BEHALF OF THE ATLAS COLLABORATION

2014

Grants

Novel techniques for boosted top quarks reconstruction for new physics searches at LHC

PI GAČR 19-21484S, 2019–2021(2)

Research Infrastructure for Experiments at CERN,

RESEARCHER MEYS LM2018104 2020–2022

Getting new knowledge of the microworld using the CERN infrastructure

RESEARCHER MEYS INTER-EXCELLENCE LTT17018 2017–2022

Rozvoj nadaných studentů SŠ prostřednictvím přírodovědných výzkumných a vzdělávacích aktivit

PI MEYS 0053/7/NAD/2021 2021

Nanotechnologies for Future

RESEARCHER, VPIII, SUPERVISOR OF ACTIVITY AIII MEYS EF16_019/0000754 2018–2022

Teaching and students supervision

Applied physics and Nanotechnology study programmes:

TEACHING AT THE FACULTY OF SCIENCE, PALACKÝ U IN OLOMOUC 2014—PRESENT 2014–

- Quantum mechanics 1 & 2, Detectors in high energy physics, Statistics in high energy physics, Standard model of elementary particles.
- Past: Relativistic quantum mechanics, Quantum field theory.
- Supervisor of 2 PhD theses in particle physics, advisor of a MSc and Bc. theses in applied and particle physics at the Palacký U. Previously supervisor of 4 MSc and 2 Bc theses in particle, astroparticle and theoretical physics at the Palacký U and supervisor of 2 MSc theses at the Charles U in Prague. Supervisor for the CERN Summer Student Programme

OUTREACH

Coordinator of the “Badatel UP” outreach project, organizing online and in-person schools for high school students. Lectures to students and general public, co-organizing the project “Science to Go!” activities in Olomouc, CERN Masterclasses, supervising high school student projects.

Organization

2020	Member of local organizing committee for the ICHEP2020 conference , co-chair of the IT/AV subgroup, co-convener of the Top/EW parallel session, proceedings co-editor.	<i>Prague, ZOOM</i>
2017	10th International Workshop on Top Quark Physics , co-chair of the International Advisory Committee	<i>Braga, Portugal</i>
2016	Local organizing committee for the 9th International Workshop on Top Quark Physics , chair, proceedings co-editor.	<i>Olomouc, Czech Republic</i>
2015	ATLAS Czech and Slovak Physics workshop , chair.	<i>Olomouc, Czech Republic</i>

Memberships

- 2020– **Member of the Ethics Committee of the Faculty of Science of the Palacký University**, vice-chair.
- 2016– **Member of the Czech council for cooperation with CERN**, on behalf of the Palacký U.
- 2021– **Advisory board of the CERN Quantum Technology Initiative**, Czech Republic representative.
- 2017– **Member**, American Physical Society Membership