

Dept. de Física Teórica y del Cosmos
Universidad de Granada
Facultad de Ciencias (Edificio Mecenaz)
E-18071 Granada
Spain

☎ +34 958 241726

FAX +34 958 248529

✉ mindaugas@ugr.es

<http://www.ugr.es/~mindaugas/>



Mindaugas Karčiauskas

Curriculum Vitae

Education and Employment

- 2010–current **Post-Doc**, *Departamento de Física Teórica y del Cosmos*, Universidad de Granada. Spain
- 2006–2010 **PhD**, *Lancaster University*, Cosmology and Astroparticle Physics.
PhD thesis: “Quantum Fluctuations of Vector Fields and the Primordial Curvature Perturbation in the Universe”
Supervisor: Dr. Konstantinos Dimopoulos
- 2003–2005 **MSc**, *Vilnius University*, Theoretical Physics and Astronomy.
Master thesis: “Dwarf Irregular Galaxy Leo A. Star Formation History”
Supervisor: Prof. Vladas Vansevičius
- 1999–2003 **BSc**, *Vilnius University*, Theoretical Physics and Astronomy.
Bachelor thesis: “Luminosity Function of Single Galaxies and Poor Groups”
Supervisor: Prof. Andrey G. Doroshkevich

Research Interests

Inflation, cosmological perturbation theory, δN formalism, statistical anisotropy, vector fields in cosmology, anisotropic universes, modified gravity.

Publications

- [1] Karčiauskas, *The Primordial Curvature Perturbation from Vector Fields of General non-Abelian Groups*, arXiv:1104.3629 [astro-ph.CO]
- [2] Karčiauskas, *The Primordial Curvature Perturbation in the Universe and Quantum Fluctuations of Vector Fields*, LAP Lambert Academic Publishing (2010), ISBN: 3838369815
- [3] Karčiauskas, M., Lyth, D. H., *On the health of a vector field with $RA^2/6$ coupling to gravity*, JCAP **1011**, 023 (2010)

- [4] Dimopoulos, K., Karčiauskas, M., Wagstaff, J.M., *Vector Curvaton without Instabilities*, Phys. Lett. B **683**, 298 (2010)
- [5] Dimopoulos, K., Karčiauskas, M., Wagstaff, J.M., *Vector Curvaton with Varying Kinetic Function*, Phys. Rev. D **81**, 023522 (2010)
- [6] Karčiauskas, M., Dimopoulos, K., Lyth, D.H., *Anisotropic non-Gaussianity from Vector Field Perturbations*, Phys. Rev. D **80**, 023509 (2009)
- [7] Dimopoulos, K., Karčiauskas, M., Lyth, D. H., Rodriguez, Y., *Statistical Anisotropy of the Curvature Perturbation from Vector Field Perturbations*, JCAP, **05**, 013 (2009)
- [8] Dimopoulos, K., Karčiauskas, M., *Non-minimally Coupled Vector Curvaton*, JHEP, **07**, 119 (2008)
- [9] Karčiauskas, M., Kjær, K., *Light Curve Analysis of VW Hyi*, Nordic-Baltic Research School, 071 (2002). ISBN:9986-9332-4-2. Ed: Meistas, E.G., Solheim, J.E.

A List of Recent Talks and Posters

- 02–04/11/2011 **Talk** title: *"The Primordial Curvature Perturbation from General non-Abelian Vector Fields"*. III CPAN Days, Barcelona, Spain
- 29/08/2011–
02/09/2011 **Talk** title: *"The Primordial Curvature Perturbation from General non-Abelian Vector Fields"*. ERE2011, Universidad Complutense Madrid, Spain
- 22–26/09/2011 **Poster** title: *"The Curvature Perturbation from General non-Abelian Vector Fields"*. COSMO 11, Porto, Portugal
- 24/06/2011 **Talk** title: *"The Curvature Perturbation from General non-Abelian Vector Fields"*. Universidad Complutense Madrid, Spain
- 27/01/2011 **Talk** title: *"Inflation, Cosmological Perturbations and Vector Fields"*. Universidad de Granada, Granada, Spain
- 27/11/2010–
01/12/2010 **Poster** title: *"The Curvature Perturbation from Vector Fields"*. II CPAN Days, Valencia, Spain
- 04/08/2010 **Talk** title: *"The Vector Curvaton"*. CERN, TH Division, Switzerland
- 11/04/2010 **Talk** title: *"The Statistically Anisotropic Curvature Perturbation from Vector Fields"*. Institute for Theoretical Physics, Heidelberg, Germany

04/04/2010 **Talk** title: *"The Statistically Anisotropic Curvature Perturbation from Vector Fields"*. Arnold Sommerfeld Center for Theoretical Physics, Munich, Germany

Schools and Visits

Long term visits

1/7/2010–30/9/2010 Marie Curie Fellowship, *CERN TH-Division*, Geneva, Switzerland

1/9/2002–5/6/2003 Exchange student, *Copenhagen University*, Copenhagen, Denmark

Summer schools

28/9/2009–1/10/2009 "Particle Astrophysics and Cosmology", *The Third School of EU Network "Universe Net"*, Bellaterra, Spain

22–26/09/2008 "Seeking Links Between Fundamental Physics and Cosmology", *The Second School of EU Network "Universe Net"*, Oxford, United Kingdom

30/6/2008–3/7/2008 "New Trends in Particle Physics and Cosmology", *Advanced Summer Institute at the University of Sheffield*, United Kingdom

24–29/09/2007 "The Origin of the Universe", *First Annual School of EU Network "UniverseNet"*, Mytilene, Greece

26/8/2007–7/9/2007 BUSSTEPP 2007, *37th British Universities Summer School in Theoretical Elementary Particle Physics*, University of York, York, United Kingdom

6–16/7/2004 "Background Microwave Radiation and Intracluster Cosmology", *International school of physics "Enrico Fermi"*, Varenna, Italy

15/6/2003–11/7/2003 "Observational Astronomy and Astrophysics", *Vatican Observatory Summer School*, Castel Gandolfo, Italy

11–25/8/2002 "Astrophysics of Interacting Stars", *Nordic Baltic Research Course*, Molėtai, Lithuania

Public Outreach Activities

- Organization In 2005 and 2006 I was in the organizing committee of the 3rd and 4th *Lithuanian Astronomy Olympiad For High School Students*.
- Publication Karčiauskas, M., Šablevičiūtė, I., *The Fate Of the Universe Is Still a Mystery*, *Mokslas ir Gyvenimas*, **12**, (2005)
- Work Placement summer/2005, *Lithuanian Museum of Ethnocosmology*. As a tourist guide I ran seminars on popular science topics, showed visitors the night sky through a telescope, gave talks on astronomy and lead "Questions and Answers" sessions.

Teaching

During my PhD I have been marking the following courseworks and ran some workshops on:

Series, Matrix Algebra and Probability	Complex Methods
Waves and Optics	Vectors and Vector Algebra
Basic Physics Skills	Oscillations and Waves

Awards and Grants

- 1/7/2010–30/9/2010 Marie Curie Fellowship, *CERN TH-Division*, Geneva, Switzerland
- 05/05/2009 William Ritchie Travel Fund
- 01/10/2006 Bursary from the Lancaster University Physics Department
- 16/06/2004 the IPS-UNESCO (ROSTE) short-term fellowship
- 19/05/2005 included in the publication "Leaders of Tomorrow" on 150 the most talented students of Vilnius University graduating that year

Other

I have been refereeing papers in “Monthly Notices of the Royal Astronomical Society” and “General Relativity and Gravitation”.

Referees

○ **Dr. Konstantinos Dimopoulos**

Physics Department
Lancaster University
Lancaster
LA1 4YB
United Kingdom

Tel: +44 1524 593645

Fax: +44 1524 844037

E-mail:

konst.dimopoulos@lancaster.ac.uk

○ **Prof. David H. Lyth**

Physics Department
Lancaster University
Lancaster
LA1 4YB
United Kingdom

Fax: +44 1524 844037

E-mail: d.lyth@lancaster.ac.uk

○ **Dr. Mar Bastero-Gil**

Departamento de Física Teórica y
del Cosmos
Facultad de Ciencias (Edificio Mece-
nas)
Universidad de Granada
E-18071 Granada
Spain

Tel: +34 958 249999

Fax: +34 958 248529

E-mail: mbg@ugr.es