
Jeremy Sakstein

Curriculum Vitae

Contact Information

Department of Physics and Astronomy
Center for Particle Cosmology
University of Pennsylvania
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Philadelphia, PA
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Academic Record

September 2016 – present
Center for Particle Cosmology,
University of Pennsylvania, USA

Postdoctoral Researcher

September 2014 – August 2016
Institute of Cosmology and Gravitation,
University of Portsmouth, UK

Postdoctoral Researcher

September 2013 – September 2014
Perimeter Institute for Theoretical Physics, Canada

Visiting Fellow

October 2010 – June 2014
Department of Applied Mathematics
and Theoretical Physics,
University of Cambridge, UK

Ph.D. Theoretical Physics

October 2009 – June 2010
Department of Applied Mathematics
and Theoretical Physics,
University of Cambridge, UK
Distinction

Part III of the Mathematical Tripos

October 2005 – June 2009
Department of Physics,
University of Oxford, UK
First Class Honours

Master of Physics

Publications

- Justin Khoury, Jeremy Sakstein & Adam R. Solomon,
Superfluids and the cosmological constant problem,
arxiv:1805.05937
- Hector O. Silva, Jeremy Sakstein, Leonardo Gualtieri, Thomas P. Sotiriou & Emanuele Berti,
Spontaneous scalarization of black holes and compact stars from a Gauss-Bonnet coupling,
Phys.Rev.Lett. 120 (2018) no.13,
arxiv:1711.02080
- Jeremy Sakstein & Bhuvnesh Jain,
Implications of the Neutron Star Merger GW170817 for Cosmological Scalar-Tensor Theories,
Phys.Rev.Lett. 119 (2017) no.25,
arxiv:1710.05893
- Jeremy Sakstein,
Tests of Gravity with Future Space-Based Experiments,
Phys.Rev. D97 (2018) no.6, 064028,
arxiv:1710.03156
- Clare Burrage & Jeremy Sakstein,
Tests of Chameleon Gravity,
Living Rev.Rel. 21 (2018) no.1, 1,
arxiv:1709.09071
- Ruifeng Dong, Jeremy Sakstein & Dejan Stojkovic,
Quasi-normal modes of black holes in scalar-tensor theories with non-minimal derivative couplings,
Phys.Rev. D96 (2017) no.6, 064048,
arxiv:1704.02425
- Jeremy Sakstein & Adam R. Solomon,
Baryogenesis in Lorentz-violating gravity theories,
Phys.Lett. B773 (2017) 186-190,
arxiv:1705.10695
- Jeremy Sakstein, Bhuvnesh Jain, Jeremy Heyl, & Lam Hui,
Tests of Gravity Theories Using Supermassive Black Holes,
Astrophys.J. 844 (2017) no.1, L14,
arxiv:1704.02425
- Jeremy Sakstein & Mark Trodden,
Baryogenesis via Dark Matter-Induced Symmetry Breaking in the Early Universe,
Phys.Lett. B774 (2017) 183-188,
arxiv:1703.10103
- Jeremy Sakstein, Eugeny Babichev, Kazuya Koyama, David Langlois & Ryo Saito,
Towards Strong Field Tests of Beyond Horndeski Gravity Theories,
Phys.Rev. D95 (2017) no.6, 064013
arxiv:1612.04263

- Jeremy Sakstein, Michael Kenna-Allison & Kazuya Koyama,
Stellar Pulsations in Beyond Horndeski Gravity Theories,
JCAP 1611 (2016) no.11, 045
arxiv:1609.01192
- Clare Burrage & Jeremy Sakstein,
A Compendium of Chameleon Constraints,
JCAP 1611 (2016) no.11, 045
arxiv:arxiv:1609.01192
- Eugeny Babichev, Kazuya Koyama, David Langlois, Ryo Saito & Jeremy Sakstein,
Relativistic Stars in Beyond Horndeski Theories,
Class.Quant.Grav. 33 (2016) no.23, 235014
arxiv:1606.06627
- Jeremy Sakstein, Harry Wilcox, David Bacon, Kazuya Koyama & Robert C. Nichol,
Testing Gravity Using Galaxy Clusters: New Constraints on Beyond Horndeski Theories,
JCAP 1607 (2016) no.07, 019
arxiv:1603.06368
- Jeremy Sakstein & Kazuya Koyama,
Testing the Vainshtein Mechanism using Stars and Galaxies,
Int.J.Mod.Phys. D24 (2015) 12, 1544021
Essay awarded *honourable mention* in the Gravity Research Foundation's 2015 awards for essays.
- Jeremy Sakstein,
Testing Gravity Using Dwarf Stars,
Phys.Rev. D92 (2015) 124045,
arXiv:1511.01685.
- Jeremy Sakstein,
Hydrogen Burning in Low Mass Stars Constrains Gravity Theories,
Phys. Rev. Lett. 115, 201101 (2015),
arXiv:1507.00568.
This letter was selected for the editor's suggestions for the 10th November 2015 issue of Physical Review Letters.
- Jeremy Sakstein & Sarunas Verner,
Disformal Gravity Theories: A Jordan Frame Analysis,
Phys.Rev. D92 (2015) 12, 123005,
arXiv:1509.05679.
- Hiu Yan Ip, Jeremy Sakstein & Fabian Schmidt,
Solar System Constraints on Disformal Gravity Theories,
JCAP 1510 (2015) 10, 051,
arXiv:1507.00568.
- Kazuya Koyama & Jeremy Sakstein,
Astrophysical Probes of the Vainshtein Mechanism: Stars and Galaxies,
Phys.Rev. D91 (2015) 12, 124066,
arXiv:1502.06872.

- Jeremy Sakstein,
Towards Viable Cosmological Models of Disformal Theories of Gravity,
Phys.Rev. D91 (2015),
arXiv:1409.7296.
- Jeremy Sakstein,
Disformal Theories of Gravity: From the Solar System to Cosmology,
JCAP 1412 (2014),
arXiv:1409.1734.
- Jeremy Sakstein, Bhuvnesh Jain, & Vinu Vikram,
Detecting modified gravity in the stars,
Int.J.Mod.Phys. D23 (2014) 12, 1442002 ,
arXiv:1409.3708.
Essay awarded *honourable mention* in the Gravity Research Foundation's 2014 awards for essays.
- Vinu Vikram, Jeremy Sakstein, Charles Davis, & Andrew Neil,
Astrophysical Tests of Modified Gravity: Stellar and Gaseous Rotation Curves in Dwarf Galaxies,
Phys.Rev. D97 (2018) 104055,
arXiv:1407.6044.
- Jeremy Sakstein,
Stellar Oscillations in Modified Gravity,
Phys.Rev. D88 (2013),
arXiv:1309.0495.
- Philippe Brax, Anne-Christine Davis, & Jeremy Sakstein,
Dynamics of Supersymmetric Chameleons,
JCAP 1310 (2013),
arXiv:1302.3080.
- Philippe Brax, Anne-Christine Davis, & Jeremy Sakstein,
Pulsar Constraints on Screened Modified Gravity,
Class.Quant.Grav. 31 (2014),
arXiv:1301.5587.
- Philippe Brax, Anne-Christine Davis, & Jeremy Sakstein,
SUPER-Screening,
Phys.Lett. B719 (2013),
arXiv:1212.4392.
- Bhuvnesh Jain, Vinu Vikram, & Jeremy Sakstein,
Astrophysical Tests of Modified Gravity: Constraints from Distance Indicators in the Nearby Universe,
Astrophys.J. 779 (2013),
arXiv:1204.6044.
- Anne-Christine Davis, Eugene A. Lim, Jeremy Sakstein, & Douglas Shaw,
Modified Gravity Makes Galaxies Brighter,
Phys.Rev. D85 (2012),
arXiv:1102.5278.

- Jeremy Sakstein, Antonio Pipino, Julien E.G. Devriendt, & Roberto Maiolino, *The Origin and Evolution of the Mass-Metallicity Relation using GALICS*, Mon.Not.Roy.Astron.Soc. 410 (2011), arXiv:1008.4158.

Selected Talks

- November 2017 *Testing of Gravity Using Supermassive Black Holes*
 PASCOS 2017
 Instituto de Física Teórica
 Madrid, Spain
- June 2017 *Testing of Gravity Using Supermassive Black Holes*
 PASCOS 2017
 Instituto de Física Teórica
 Madrid, Spain
- November 2016 Invited talk, *Novel Tests of Gravity Using Astrophysics*
 University of Mississippi
 MS, USA
- July 2016 Invited talk, *Unifying small scale probes with cosmology: astrophysical tests of gravity*
 California Institute of Technology
 CA, USA
- May 2016 Invited talk, *Testing Gravity Using Astrophysics*
 Department of Applied Mathematics and Theoretical Physics
 University of Portsmouth, UK
- September 2015 Invited talk, *Testing Gravity Using Astrophysics*
 ICG-KASI Collaboration Workshop
 University of Portsmouth, UK
- March 2015 Invited talk, *Astrophysical Tests of Gravity*
 School of Mathematics and Statistics
 The University of Sheffield, UK
- November 2014 *Astrophysical Tests of Gravity*
 Institute for Computational Cosmology
 The University of Durham, UK
- October 2014 *Disformal Theories of Gravity in the Solar System and Cosmology*
 Invited talk, *Dark Energy Interactions*
 The Nordic Institute for Theoretical Physics
 Stockholm, Sweden
- July 2014 *Hide and Seek: Screening Mechanisms Present and Future*
 Invited talk, *Non-linear Structure in the Modified Universe*
 Lorentz Center, Leiden, Netherlands
- December 2013 *Astrophysical Tests of Gravity*
27th Texas Symposium on Relativistic Astrophysics
 University of Texas at Dallas, TX, USA
- October 2013 *Astrophysical Tests of Gravity*
 Lawrence Berkeley National Laboratory, CA, USA
- April 2013 *Scalar-Tensor Screening Mechanisms*
 Invited talk, *Novel Probes of Dark Energy and Modified Gravity*
 University of Pennsylvania, PA, USA