



DiRAC Publications 2015

dp001: Stellar coronae and winds
PI: Dr Aline Vidotto
Science Area: Astronomy & Astrophysics
Machines: Data Analytic
Institute: Trinity College Dublin

On the environment surrounding close-in exoplanets
Vidotto, A. A., Fares, R., Jardine, M., et al.
2015, MNRAS, [10.1093/mnras/stv618](https://doi.org/10.1093/mnras/stv618)

dp002: The COSMOS Consortium: Fundamental Cosmology and the Origin of Structure in the Universe
PI: Prof. Paul Shellard
Science Area: Astronomy & Astrophysics
Machines: Data Centric, SMP, Data Analytic, Complexity
Institute: University of Cambridge

The numerical relativity breakthrough for binary black holes
Sperhake, Ulrich
2015, CQGra, [10.1088/0264-9381/32/12/124011](https://doi.org/10.1088/0264-9381/32/12/124011)

Constraining the WMAP9 bispectrum and trispectrum with needlets
Regan, Donough, Gosenca, Mateja, Seery, David
2015, JCAP, [10.1088/1475-7516/2015/01/013](https://doi.org/10.1088/1475-7516/2015/01/013)

Models of the Primordial Standard Clock
Chen, Xingang, Namjoo, MohammadHossein, Wang, Yi
2015, JCAP, [10.1088/1475-7516/2015/02/027](https://doi.org/10.1088/1475-7516/2015/02/027)

ExoMol line lists - VIII. A variationally computed line list for hot formaldehyde
Al-Refaie, AhmedF., Yachmenev, Andrey, Tennyson, Jonathan, et al.
2015, MNRAS, [10.1093/mnras/stv091](https://doi.org/10.1093/mnras/stv091)

BAYES-X: a Bayesian inference tool for the analysis of X-ray observations of galaxy clusters
Olamaie, Malak, Feroz, Farhan, Grainge, KeithJ. B., et al.
2015, MNRAS, [10.1093/mnras/stu2146](https://doi.org/10.1093/mnras/stu2146)

The clustering of galaxies in the SDSS-III Baryon Oscillation Spectroscopic Survey: mock galaxy catalogues for the low-redshift sample
Manera, Marc, Samushia, Lado, Tojeiro, Rita, et al.

2015, MNRAS, [10.1093/mnras/stu2465](https://doi.org/10.1093/mnras/stu2465)

Missing black holes in brightest cluster galaxies as evidence for the occurrence of superkicks in nature

Gerosa, Davide, Sesana, Alberto

2015, MNRAS, [10.1093/mnras/stu2049](https://doi.org/10.1093/mnras/stu2049)

Evidence of patchy hydrogen reionization from an extreme Ly α trough below redshift six

Becker, GeorgeD., Bolton, JamesS., Madau, Piero, et al.

2015, MNRAS, [10.1093/mnras/stu2646](https://doi.org/10.1093/mnras/stu2646)

Effective Potentials and Morphological Transitions for Binary Black Hole Spin Precession

Kesden, Michael, Gerosa, Davide, O'Shaughnessy, Richard, et al.

2015, PhRvL, [10.1103/PhysRevLett.114.081103](https://doi.org/10.1103/PhysRevLett.114.081103)

Comparison of Sunyaev-Zel'dovich measurements from Planck and from the Arcminute Microkelvin Imager for 99 galaxy clusters

Perrott, Y. C., Olamaie, M., Rumsey, C., et al.

2015, A&A, [10.1051/0004-6361/201424188](https://doi.org/10.1051/0004-6361/201424188)

Astrochemical Correlations in Molecular Clouds

Gaches, BrandtA. L., Offner, StellaS. R., Rosolowsky, ErikW., et al.

2015, ApJ, [10.1088/0004-637X/799/2/235](https://doi.org/10.1088/0004-637X/799/2/235)

IGM Constraints from the SDSS-III/BOSS DR9 Ly α Forest Transmission Probability Distribution Function

Lee, Khee-Gan, Hennawi, JosephF., Spergel, DavidN., et al.

2015, ApJ, [10.1088/0004-637X/799/2/196](https://doi.org/10.1088/0004-637X/799/2/196)

Tensor-multi-scalar theories: relativistic stars and 3 + 1 decomposition

Horbatsch, Michael, Silva, HectorO., Gerosa, Davide, et al.

2015, CQGra, [10.1088/0264-9381/32/20/204001](https://doi.org/10.1088/0264-9381/32/20/204001)

Testing general relativity with present and future astrophysical observations

Berti, Emanuele, Barausse, Enrico, Cardoso, Vitor, et al.

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Nonlinear interactions between black holes and Proca fields

Zilho, Miguel, Witek, Helvi, Cardoso, Vitor

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The bispectrum of cosmic string temperature fluctuations including recombination effects

Regan, Donough, Hindmarsh, Mark

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Constraining Galileon inflation

Regan, Donough, Anderson, GemmaJ., Hull, Matthew, et al.
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The bispectrum of matter perturbations from cosmic strings
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f(R) gravity on non-linear scales: the post-Friedmann expansion and the vector potential
Thomas, D. B., Bruni, M., Koyama, K., et al.
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Black holes with a single Killing vector field: black resonators
Dias, scarJ. C., Santos, JorgeE., Way, Benson
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Emergent scale invariance of disordered horizons
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Cold Baryogenesis from first principles in the two-Higgs doublet model with fermions
Mou, Zong-Gang, Saffin, PaulM., Tranberg, Anders
2015, JHEP, [10.1007/JHEP06\(2015\)163](https://doi.org/10.1007/JHEP06(2015)163)

Exploring New Physics Frontiers Through Numerical Relativity
Cardoso, Vitor, Gualtieri, Leonardo, Herdeiro, CarlosA. R., et al.
2015, LRR, [10.1007/lrr-2015-1](https://doi.org/10.1007/lrr-2015-1)

Calibrating cosmological radiative transfer simulations with Ly alpha forest data: evidence for large spatial UV background fluctuations at $z \sim 5.6-5.8$ due to rare bright sources
Chardin, Jonathan, Haehnelt, MartinG., Aubert, Dominique, et al.
2015, MNRAS, [10.1093/mnras/stv1786](https://doi.org/10.1093/mnras/stv1786)

Lyman alpha emitters gone missing: evidence for late reionization?
Choudhury, TirthankarRoy, Puchwein, Ewald, Haehnelt, MartinG., et al.
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Spin alignment and differential accretion in merging black hole binaries
Gerosa, D., Veronesi, B., Lodato, G., et al.
2015, MNRAS, [10.1093/mnras/stv1214](https://doi.org/10.1093/mnras/stv1214)

Spiral- and bar-driven peculiar velocities in Milky Way-sized galaxy simulations
Grand, RobertJ. J., Bovy, Jo, Kawata, Daisuke, et al.
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Dynamical evolution of massive black holes in galactic-scale N-body simulations - introducing the regularized tree code 'rVINE'
Karl, SimonJ., Aarseth, SverreJ., Naab, Thorsten, et al.

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Prmt5 is a regulator of muscle stem cell expansion in adult mice

Zhang, Ting, Gnther, Stefan, Looso, Mario, et al.

2015, NatCo, [10.1038/ncomms8140](https://doi.org/10.1038/ncomms8140)

The fully non-linear post-Friedmann frame-dragging vector potential: magnitude and time evolution from N-body simulations

Thomas, DanielB., Bruni, Marco, Wands, David

2015, MNRAS, [10.1093/mnras/stv1390](https://doi.org/10.1093/mnras/stv1390)

A tidal encounter caught in the act: modelling a star-disc fly-by in the young RW Aurigae system

Dai, Fei, Facchini, Stefano, Clarke, CathieJ., et al.

2015, MNRAS, [10.1093/mnras/stv403](https://doi.org/10.1093/mnras/stv403)

Internal alignments of red versus blue discs in dark matter haloes

Debattista, VictorP., vandenBosch, FrankC., Roskar, Rok, et al.

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Impact of radial migration on stellar and gas radial metallicity distribution

Grand, RobertJ. J., Kawata, Daisuke, Cropper, Mark

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Isolating signatures of major cloud-cloud collisions using position-velocity diagrams

Haworth, T. J., Tasker, E. J., Fukui, Y., et al.

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The stellar kinematics of corotating spiral arms in Gaia mock observations

Hunt, JasonA. S., Kawata, Daisuke, Grand, RobertJ. J., et al.

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Principal components of CMB non-Gaussianity

Regan, Donough, Munshi, Dipak

2015, MNRAS, [10.1093/mnras/stv153](https://doi.org/10.1093/mnras/stv153)

Binary accretion rates: dependence on temperature and mass ratio

Young, M. D., Clarke, C. J.

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Multi-timescale analysis of phase transitions in precessing black-hole binaries

Gerosa, Davide, Kesden, Michael, Sperhake, Ulrich, et al.

2015, PhRvD, [10.1103/PhysRevD.92.064016](https://doi.org/10.1103/PhysRevD.92.064016)

Lindquist-Wheeler formulation of lattice universes

Liu, RexG.

2015, PhRvD, [10.1103/PhysRevD.92.063529](https://doi.org/10.1103/PhysRevD.92.063529)

Near optimal bispectrum estimators for large-scale structure

Schmittfull, Marcel, Baldauf, Tobias, Seljak, Uros
2015, PhRvD, [10.1103/PhysRevD.91.043530](https://doi.org/10.1103/PhysRevD.91.043530)

Delensing the CMB with the cosmic infrared background
Sherwin, BlakeD., Schmittfull, Marcel
2015, PhRvD, [10.1103/PhysRevD.92.043005](https://doi.org/10.1103/PhysRevD.92.043005)

Polyspectra searches for sharp oscillatory features in cosmic microwave sky data
Fergusson, J. R., Gruetjen, H. F., Shellard, E. P. S., et al.
2015, PhRvD, [10.1103/PhysRevD.91.123506](https://doi.org/10.1103/PhysRevD.91.123506)

Combining power spectrum and bispectrum measurements to detect oscillatory features
Fergusson, J. R., Gruetjen, H. F., Shellard, E. P. S., et al.
2015, PhRvD, [10.1103/PhysRevD.91.023502](https://doi.org/10.1103/PhysRevD.91.023502)

Numerical simulations of acoustically generated gravitational waves at a first order phase transition
Hindmarsh, Mark, Huber, StephanJ., Rummukainen, Kari, et al.
2015, PhRvD, [10.1103/PhysRevD.92.123009](https://doi.org/10.1103/PhysRevD.92.123009)

Precessional Instability in Binary Black Holes with Aligned Spins
Gerosa, Davide, Kesden, Michael, O'Shaughnessy, Richard, et al.
2015, PhRvL, [10.1103/PhysRevLett.115.141102](https://doi.org/10.1103/PhysRevLett.115.141102)

Warm dark matter signatures on the 21cm power spectrum: intensity mapping forecasts for SKA
Carucci, IsabellaP., Villaescusa-Navarro, Francisco, Viel, Matteo, et al.
2015, JCAP, [10.1088/1475-7516/2015/07/047](https://doi.org/10.1088/1475-7516/2015/07/047)

GRChombo: Numerical relativity with adaptive mesh refinement
Clough, Katy, Figueras, Pau, Finkel, Hal, et al.
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On the relative importance of different microphysics on the D-type expansion of galactic H II regions
Haworth, T. J., Harries, T. J., Acreman, D. M., et al.
2015, MNRAS, [10.1093/mnras/stv1814](https://doi.org/10.1093/mnras/stv1814)

Contribution of domain wall networks to the CMB power spectrum
Lazanu, A., Martins, C. J. A. P., Shellard, E. P. S.
2015, PhLB, [10.1016/j.physletb.2015.06.034](https://doi.org/10.1016/j.physletb.2015.06.034)

Constraints on the Nambu-Goto cosmic string contribution to the CMB power spectrum in light of new temperature and polarisation data
Lazanu, Andrei, Shellard, Paul
2015, JCAP, [10.1088/1475-7516/2015/02/024](https://doi.org/10.1088/1475-7516/2015/02/024)

CMB power spectrum of Nambu-Goto cosmic strings

Lazanu, Andrei, Shellard, E. P. S., Landriau, Martin
2015, PhRvD, [10.1103/PhysRevD.91.083519](https://doi.org/10.1103/PhysRevD.91.083519)

Weighing Neutrinos with Cosmic Neutral Hydrogen
Villaescusa-Navarro, Francisco, Bull, Philip, Viel, Matteo
2015, ApJ, [10.1088/0004-637X/814/2/146](https://doi.org/10.1088/0004-637X/814/2/146)

dp003: ISM

PI: Dr Jeremy Yates

Science Area: Astronomy & Astrophysics

Machines: SMP, Complexity

Institute: University College London

Awakening of The High-Redshift Blazar CGRaBS J0809+5341
Paliya, VaidehiS., Parker, M. L., Stalin, C. S., et al.
2015, ApJ, [10.1088/0004-637X/803/2/112](https://doi.org/10.1088/0004-637X/803/2/112)

STARBENCH: the D-type expansion of an H II region
Bisbas, T. G., Haworth, T. J., Williams, R. J. R., et al.
2015, MNRAS, [10.1093/mnras/stv1659](https://doi.org/10.1093/mnras/stv1659)

TORUS-3DPDR: a self-consistent code treating three-dimensional photoionization
and photodissociation regions
Bisbas, T. G., Haworth, T. J., Barlow, M. J., et al.
2015, MNRAS, [10.1093/mnras/stv2156](https://doi.org/10.1093/mnras/stv2156)

dp004: VIRGO Consortium

PI: Prof. Carlos Frenk

Science Area: Astronomy & Astrophysics

Machines: Data Centric

Institute: Durham University

Creating mock catalogues of stellar haloes from cosmological simulations
Lowing, Ben, Wang, Wenting, Cooper, Andrew, et al.
2015, MNRAS, [10.1093/mnras/stu2257](https://doi.org/10.1093/mnras/stu2257)

Galaxy And Mass Assembly (GAMA): the halo mass of galaxy groups from maximum-
likelihood weak lensing
Han, Jiaxin, Eke, VincentR., Frenk, CarlosS., et al.
2015, MNRAS, [10.1093/mnras/stu2178](https://doi.org/10.1093/mnras/stu2178)

Galaxy properties and the cosmic web in simulations
Metuki, Ofer, Libeskind, NoamI., Hoffman, Yehuda, et al.

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Simulated observations of sub-millimetre galaxies: the impact of single-dish resolution and field variance

Cowley, William I., Lacey, Cedric G., Baugh, Carlton M., et al.

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The EAGLE project: simulating the evolution and assembly of galaxies and their environments

Schaye, Joop, Crain, Robert A., Bower, Richard G., et al.

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The metallicity of galactic winds

Creasey, Peter, Theuns, Tom, Bower, Richard G.

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Velocity and mass bias in the distribution of dark matter haloes

Jennings, Elise, Baugh, Carlton M., Hatt, Dylan

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Barber, Christopher, Starkenburg, Else, Navarro, Julio F., et al.

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Testing the quasi-static approximation in $f(R)$ gravity simulations

Bose, Sownak, Hellwing, Wojciech A., Li, Baojiu

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How well can cold dark matter substructures account for the observed radio flux-ratio anomalies

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The 0.1 z \rightarrow 1.65 evolution of the bright end of the [O ii] luminosity function

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The environments of Ly alpha blobs - I. Wide-field Ly alpha imaging of TN J1338-1942, a powerful radio galaxy at $z \sim 4.1$ associated with a giant Ly alpha nebula

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Bent by baryons: the low-mass galaxy-halo relation

Sawala, Till, Frenk, Carlos S., Fattahi, Azadeh, et al.

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Orbital parameters of infalling satellite haloes in the hierarchical LambdaCDM model

Jiang, Lilian, Cole, Shaun, Sawala, Till, et al.

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The origin of the atomic and molecular gas contents of early-type galaxies - II.
Misaligned gas accretion

Lagos, ClaudiadelP., Padilla, NelsonD., Davis, TimothyA., et al.

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A new spin on discs of satellite galaxies

Cautun, Marius, Wang, Wenting, Frenk, CarlosS., et al.

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A scheme for radiation pressure and photon diffusion with the M1 closure in RAMSES-RT

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Dark matter-radiation interactions: the impact on dark matter haloes

Schewtschenko, J. A., Wilkinson, R. J., Baugh, C. M., et al.

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Star-forming filaments in warm dark matter models

Gao, Liang, Theuns, Tom, Springel, Volker

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The behaviour of dark matter associated with four bright cluster galaxies in the 10 kpc core of Abell 3827

Massey, Richard, Williams, Liliya, Smit, Renske, et al.

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The broadening of Lyman-alpha forest absorption lines

Garzilli, Antonella, Theuns, Tom, Schaye, Joop

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The EAGLE simulations of galaxy formation: calibration of subgrid physics and model variations

Crain, RobertA., Schaye, Joop, Bower, RichardG., et al.

2015, MNRAS, [10.1093/mnras/stv725](https://doi.org/10.1093/mnras/stv725)

Evolution of galaxy stellar masses and star formation rates in the EAGLE simulations

Furlong, M., Bower, R. G., Theuns, T., et al.

2015, MNRAS, [10.1093/mnras/stv852](https://doi.org/10.1093/mnras/stv852)

Galactic magnetic fields and hierarchical galaxy formation

Rodrigues, L. F. S., Shukurov, A., Fletcher, A., et al.

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Surface brightness profiles of blue compact dwarf galaxies in the GOODS-N and GOODS-S field

Lian, J. H., Kong, X., Jiang, N., et al.
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Testing gravity using cosmic voids
Cai, Yan-Chuan, Padilla, Nelson, Li, Baojiu
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Baryon effects on the internal structure of LambdaCDM haloes in the EAGLE simulations
Schaller, Matthieu, Frenk, CarlosS., Bower, RichardG., et al.
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Decaying dark matter: the case for a deep X-ray observation of Draco
Lovell, MarkR., Bertone, Gianfranco, Boyarsky, Alexey, et al.
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nIFTy cosmology: comparison of galaxy formation models
Knebe, Alexander, Pearce, FrazerR., Thomas, PeterA., et al.
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Surface photometry of brightest cluster galaxies and intracluster stars in LambdaCDM
Cooper, A. P., Gao, L., Guo, Q., et al.
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Testing Sunyaev-Zel'dovich measurements of the hot gas content of dark matter haloes using synthetic skies
LeBrun, AmandineM. C., McCarthy, IanG., Melin, Jean-Baptiste
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Weak lensing by voids in modified lensing potentials
Barreira, Alexandre, Cautun, Marius, Li, Baojiu, et al.
2015, JCAP, [10.1088/1475-7516/2015/08/028](https://doi.org/10.1088/1475-7516/2015/08/028)

A new methodology to test galaxy formation models using the dependence of clustering on stellar mass
Campbell, DavidJ. R., Baugh, CarltonM., Mitchell, PeterD., et al.
2015, MNRAS, [10.1093/mnras/stv1315](https://doi.org/10.1093/mnras/stv1315)

Colours and luminosities of $z = 0.1$ galaxies in the EAGLE simulation
Trayford, JamesW., Theuns, Tom, Bower, RichardG., et al.
2015, MNRAS, [10.1093/mnras/stv1461](https://doi.org/10.1093/mnras/stv1461)

Distinguishing general relativity and $f(R)$ gravity with the gravitational lensing Minkowski functionals
Ling, Chenxiaoji, Wang, Qiao, Li, Ran, et al.
2015, PhRvD, [10.1103/PhysRevD.92.064024](https://doi.org/10.1103/PhysRevD.92.064024)

Exploring the liminality: properties of haloes and subhaloes in borderline $f(R)$ grav-

ity

Shi, Difu, Li, Baojiu, Han, Jiabin, et al.
2015, MNRAS, [10.1093/mnras/stv1549](https://doi.org/10.1093/mnras/stv1549)

Galaxy clusters and groups in the ALHAMBRA survey
Ascaso, B., Bentez, N., Fernandez-Soto, A., et al.
2015, MNRAS, [10.1093/mnras/stv1317](https://doi.org/10.1093/mnras/stv1317)

Hubble Frontier Fields: a high-precision strong-lensing analysis of the massive galaxy cluster Abell 2744 using 180 multiple images
Jauzac, M., Richard, J., Jullo, E., et al.
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SLUG - stochastically lighting up galaxies - III. A suite of tools for simulated photometry, spectroscopy, and Bayesian inference with stochastic stellar populations
Krumholz, MarkR., Fumagalli, Michele, daSilva, RobertL., et al.
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The distribution of neutral hydrogen around high-redshift galaxies and quasars in the EAGLE simulation
Rahmati, Alireza, Schaye, Joop, Bower, RichardG., et al.
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The effect of baryons on the inner density profiles of rich clusters
Schaller, Matthieu, Frenk, CarlosS., Bower, RichardG., et al.
2015, MNRAS, [10.1093/mnras/stv1341](https://doi.org/10.1093/mnras/stv1341)

The evolution of galaxy metallicity scaling relations in cosmological hydrodynamical simulations
DeRossi, M. E., Theuns, T., Font, A. S., et al.
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dp005: Theoretical Astrophysics at Leicester

PI: Dr Mark Wilkinson

Science Area: Astronomy & Astrophysics

Machines: Data Analytic, Complexity

Institute: University of Leicester

The Degeneracy of M33 Mass Modeling and Its Physical Implications

Hague, P. R., Wilkinson, M. I.
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galaxies

Bourne, Martin A., Zubovas, Kastytis, Nayakshin, Sergei
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Nayakshin, Sergei
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dp006: Extreme QCD

PI: Prof. Chris Allton

Science Area: Particle Physics

Machines: BG/Q

Institute: Swansea University

The phase diagram of heavy dense QCD with complex Langevin simulations

Aarts, Gert, Attanasio, Felipe, Jger, Benjamin, et al.
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Hadron wave functions as a probe of a two-color baryonic medium

Amato, Alessandro, Giudice, Pietro, Hands, Simon
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Domain Wall Fermions for Planar Physics

Hands, Simon
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dp007: Hadron physics of up, down and strange quarks

PI: Dr Roger Horsley

Science Area: Particle Physics

Machines: BG/Q

Institute: University of Edinburgh

Determination of the Strange Nucleon Form Factors

Shanahan, P. E., Horsley, R., Nakamura, Y., et al.
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Chambers, A. J., Horsley, R., Nakamura, Y., et al.
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Electric Dipole Moment of the Neutron from 2 +1 Flavor Lattice QCD

Guo, F. -K., Horsley, R., Meiner, U. -G., et al.
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Shanahan, P. E., Horsley, R., Nakamura, Y., et al.
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Chambers, A. J., Horsley, R., Nakamura, Y., et al.
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dp008: UKQCD DWF: physics with dynamical chiral quarks

PI: Dr Andreas Juettner

Science Area: Particle Physics

Machines: BG/Q

Institute: University of Southampton

Charm physics with physical light and strange quarks using domain wall fermions

Boyle, Peter A., DelDebbio, Luigi, Garron, Nicolas, et al.
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$K \rightarrow \pi\pi\Delta I = 3/2$ decay amplitude in the continuum limit

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Improved lattice fermion action for heavy quarks

Cho, Yong-Gwi, Hashimoto, Shoji, Jttner, Andreas, et al.
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The kaon semileptonic form factor in $N_f = 2 + 1$ domain wall lattice QCD with physical light quark masses

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Domain Wall Charm Physics with Physical Pion Masses: Decay constants, bag and ξ parameters

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dp009: Non perturbative BSM dynamics

PI: Dr Antonio Rago

Science Area: Particle Physics

Machines: BG/Q

Institute: Plymouth University

IR fixed points in $SU(3)$ gauge theories

Ishikawa, K. -I., Iwasaki, Y., Nakayama, Yu, et al.
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dp010: UKMHD Consortium: 2) Solar Atmosphere

PI: Prof. Alan Hood

Science Area: Astronomy & Astrophysics

Machines: BG/Q, Data Analytic, Wilkes GPU

Institute: University of St Andrews

Helical Blowout Jets in the Sun: Untwisting and Propagation of Waves

Lee, E. J., Archontis, V., Hood, A. W.

2015, ApJ, [10.1088/2041-8205/798/1/L10](https://doi.org/10.1088/2041-8205/798/1/L10)

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Spontaneous reconnection at a separator current layer: 1. Nature of the reconnection

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2015, JGRA, [10.1002/2015JA021736](https://doi.org/10.1002/2015JA021736)

dp012: Black Holes

PI: Dr Debora Sijacki

Science Area: Astronomy & Astrophysics

Machines: Data Centric, Data Analytic, Complexity

Institute: University of Cambridge

Fast cold gas in hot AGN outflows

Costa, Tiago, Sijacki, Debora, Haehnelt, MartinG.

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The EAGLE simulations of galaxy formation: calibration of subgrid physics and model variations

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Dynamical evolution of massive black holes in galactic-scale N-body simulations - introducing the regularized tree code 'rVINE'

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evidence for large spatial UV background fluctuations at $z \sim 5.6-5.8$ due to rare bright sources

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Resolving flows around black holes: numerical technique and applications
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Modified gravity N-body code comparison project
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dp014: Galactic scale studies of star formation

PI: Prof. Ian Bonnell

Science Area: Astronomy & Astrophysics

Machines: Complexity

Institute: University of St Andrews

The onset of large-scale turbulence in the interstellar medium of spiral galaxies
Falceta-Gonalves, D., Bonnell, I., Kowal, G., et al.
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dp015: High Performance Computing Support for Exeter Astrophysics

PI: Prof. Matthew Bate

Science Area: Astronomy & Astrophysics

Machines: BG/Q, Data Centric, Complexity

Institute: University of Exeter

Are turbulent spheres suitable initial conditions for star-forming clouds?
Rey-Raposo, Ramon, Dobbs, Clare, Duarte-Cabral, Ana
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The frequency and nature of ‘cloud-cloud collisions’ in galaxies
Dobbs, C. L., Pringle, J. E., Duarte-Cabral, A.

2015, MNRAS, [10.1093/mnras/stu2319](https://doi.org/10.1093/mnras/stu2319)

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Duarte-Cabral, A., Acreman, D. M., Dobbs, C. L., et al.

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Dobbs, ClareL.

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Harries, TimJ.

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The morphology of the Milky Way - II. Reconstructing CO maps from disc galaxies with live stellar distributions

Pettitt, AlexR., Dobbs, ClareL., Acreman, DavidM., et al.

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Lewis, BenjaminT., Bate, MatthewR., Price, DanielJ.

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Indirect Detection of Forming Protoplanets via Chemical Asymmetries in Disks

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On the relative importance of different microphysics on the D-type expansion of galactic H II regions

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dp016: Nephthys: A New Generation of Galaxy Zooms

PI: Dr Adrienne Slyz

Science Area: Astronomy & Astrophysics

Machines: Complexity

Institute: University of Oxford

Intrinsic alignment of simulated galaxies in the cosmic web: implications for weak lensing surveys

Codis, S., Gavazzi, R., Dubois, Y., et al.
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A detailed study of feedback from a massive star
Geen, Sam, Rosdahl, Joakim, Blaizot, Jeremy, et al.
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Pontzen, Andrew, Read, JustinI., Teyssier, Romain, et al.
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Dubois, Yohan, Volonteri, Marta, Silk, Joseph, et al.
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dp019: HPQCD High Precision QCD Collaboration

PI: Prof. Christine Davies

Science Area: Particle Physics

Machines: Data Analytic

Institute: University of Glasgow

B -meson decay constants: A more complete picture from full lattice QCD

Colquhoun, B., Davies, C. T. H., Kettle, J., et al.

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dp020: EXOMOL**PI: Prof. Jonathon Tennyson****Science Area: Astronomy & Astrophysics****Machines: SMP, Data Analytic****Institute: University College London**

Adapting the serial Alpgen parton-interaction generator to simulate LHC collisions on millions of parallel threads

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A variationally calculated room temperature line-list for H₂O₂

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dp031: Kinetic Plasma Turbulence**PI: Prof. David Burgess****Science Area: Astronomy & Astrophysics****Machines: Complexity****Institute: Queen Mary University of London**

The Three-dimensional Evolution of Ion-scale Current Sheets: Tearing and Drift-kink Instabilities in the Presence of Proton Temperature Anisotropy

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Gingell, P. W., Sundberg, T., Burgess, D.

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dp033: Radiative Transfer in Type I Supernovae

PI: Dr Stuart Sim

Science Area: Astronomy & Astrophysics

Machines: Complexity

Institute: Queen's University Belfast

Polarization spectral synthesis for Type Ia supernova explosion models

Bulla, M., Sim, S. A., Kromer, M.

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dp046: Galactic Evolution

PI: Dr Victor Debattista

Science Area: Astronomy & Astrophysics

Machines: SMP

Institute: University of Central Lancashire

Internal alignments of red versus blue discs in dark matter haloes

Debattista, VictorP., vandenBosch, FrankC., Roskar, Rok, et al.

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dp047: DISCSIM

PI: Prof. Cathy Clarke

Science Area: Astronomy & Astrophysics

Machines: SMP, Data Analytic

Institute: University of Southampton

On the relative importance of different microphysics on the D-type expansion of galactic H II regions

Haworth, T. J., Harries, T. J., Acreman, D. M., et al.

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dp060: Temperature dependent cross-sections for large hydrocarbons**PI: Dr Sergey Yurchenko****Science Area: Astronomy & Astrophysics****Machines: SMP, Data Analytic, Wilkes GPU****Institute: University College London**

Adapting the serial Alpgen event generator to simulate LHC collisions on millions of parallel threads

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dp064: Linking the nuclear interaction to the structure of the heavy elements**PI: Dr Carlo Barbieri****Science Area: Particle Physics****Machines: Data Analytic, Complexity****Institute: University of Surrey**

Skyrme tensor force in heavy ion collisions

Stevenson, P. D., Suckling, E. B., Fracasso, S., et al.

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