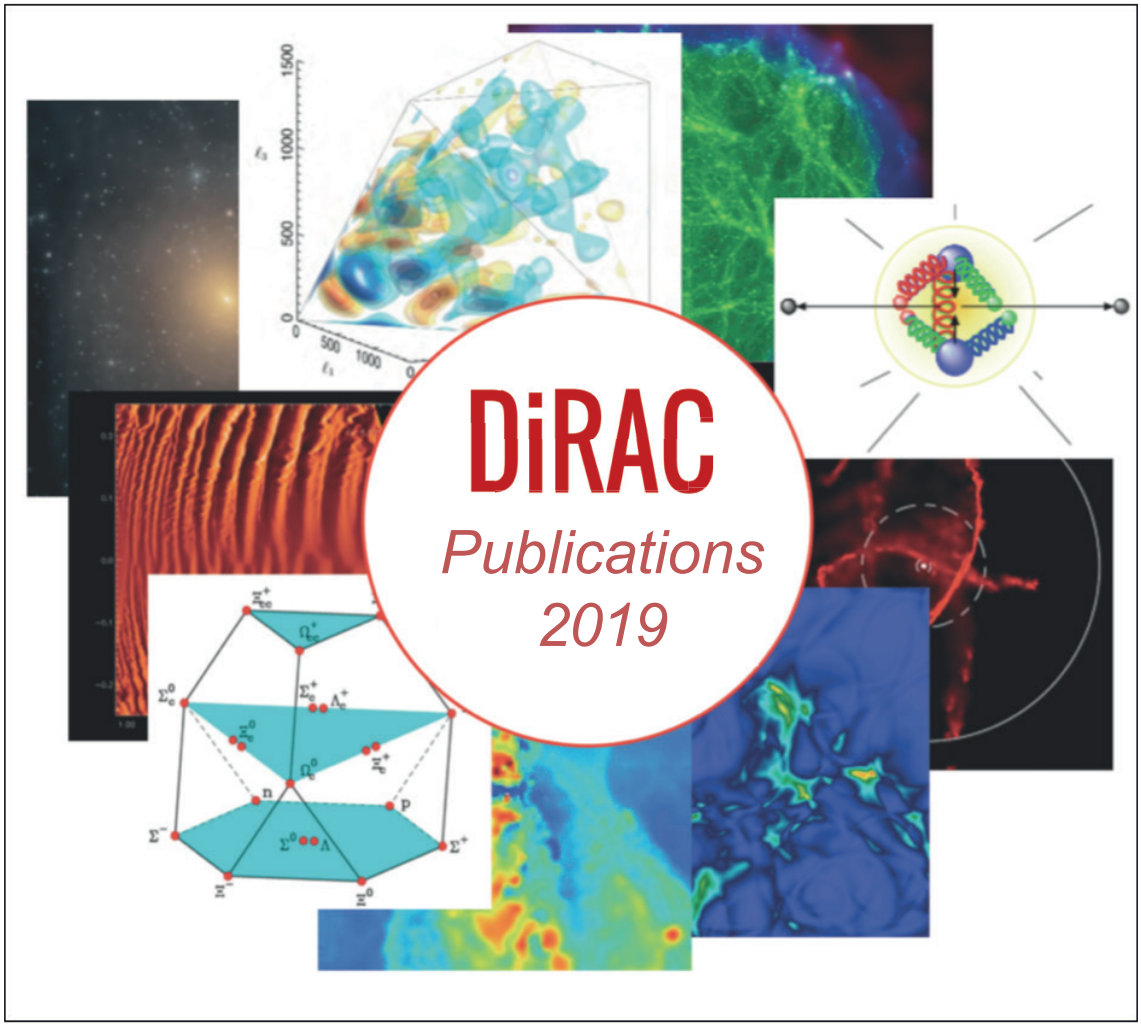
DiRAC
Publications
2019

DiRAC Publications
2019

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dp002: The COSMOS Consortium: Unveiling the Structure of the Universe
PI: Prof. Paul Shellard
Science Area: Astronomy & Astrophysics
Machines: Memory Intensive Durham, Data Intensive Cambridge, Data Intensive Leicester
Institute: University of Cambridge

Cosmic string loop collapse in full general relativity
Thomas Helfer, Josu C. Aurrekoetxea, and Eugene A. Lim
2019, PhRvD, 10.1103/PhysRevD.99.104028

CMB-S4 forecast on the primordial non-Gaussianity parameter of feature models
Wuhyun Sohn and James R. Fergusson
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General modal estimation for cross-bispectra
Maresuke Shiraishi, Michele Liguori, James R. Fergusson, et al.
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2019, Phil. Trans. Roy. Soc. Lond., 10.1098/rsta.2019.0004

Creating a traversable wormhole
Gary T. Horowitz, Don Marolf, Jorge E. Santos, et al.
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Phases of Holographic Hawking Radiation on spatially compact spacetimes
Donald Marolf and Jorge E. Santos
2019, JHEP, 10.1007/JHEP10(2019)250

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dp004: VIRGO Consortium
PI: Prof. Carlos Frenk
Science Area: Astronomy & Astrophysics
Machines: Memory Intensive Durham
Institute: Durham University

Atomic and molecular gas in IllustrisTNG galaxies at low redshift
Benedikt Diemer, Adam R. H. Stevens, Claudia del P. Lagos, et al.
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Galaxy formation in the Planck Millennium: the atomic hydrogen content of dark matter halos
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J. M. Diederik Kruijssen, Joel L. Pfeffer, Marta Reina-Campos, et al.
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Ultra-diffuse galaxies in the Auriga simulations
Shihong Liao, Liang Gao, Carlos S. Frenk, et al.
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Cosmological test of gravity using weak lensing voids
Christopher T. Davies, Marius Cautun, and Baojiu Li
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Young star cluster populations in the E-MOSAICS simulations
Joel Pfeffer, Nate Bastian, J. M. Diederik Kruijssen, et al.
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Simulating galaxy formation in f(R) modified gravity: matter, halo, and galaxy statistics
Christian Arnold and Baojiu Li
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The total stellar halo mass of the Milky Way
Alis J. Deason, Vasily Belokurov, and Jason L. Sanders
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T. A. F. Comerford, R. G. Izzard, R. A. Booth, et al.
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Screening maps of the local Universe I - Methodology
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The connection between halo concentrations and assembly histories: a probe of gravity?
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The prevalence of pseudo-bulges in the Auriga simulations
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Galaxy structure with strong gravitational lensing: decomposing the internal mass distribution of massive elliptical galaxies
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He abundances in disc galaxies. I. Predictions from cosmological chemodynamical simulations
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The self-similarity of weak lensing peaks
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Alejandro Benítez-Llambay, Carlos S. Frenk, Aaron D. Ludlow, et al.
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Jesús Zavala and Carlos S. Frenk
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Matteo Leo, Christian Arnold, and Baojiu Li
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Aaron D. Ludlow, Joop Schaye, Matthieu Schaller, et al.
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Observable tests of self-interacting dark matter in galaxy clusters: BCG wobbles in a constant density core
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The mass-size plane of EAGLE galaxies
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Observable tests of self-interacting dark matter in galaxy clusters: cosmological simulations with SIDM and baryons
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Numerical convergence of simulations of galaxy formation: the abundance and internal structure of cold dark matter haloes
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The Cosmic Ballet II: spin alignment of galaxies and haloes with large-scale filaments in the EAGLE simulation
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The evolution of the UV luminosity function of globular clusters in the E-MOSAICS simulations
Joel Pfeffer, Nate Bastian, Robert A. Crain, et al.
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Simulating Jupiter's weather layer. Part II: Passive ammonia and water cycles
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Fluorescent rings in star-free dark matter haloes
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No cores in dark matter-dominated dwarf galaxies with bursty star formation histories
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Simulating Jupiter's weather layer. Part I: Jet spin-up in a dry atmosphere
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The evolution of SMBH spin and AGN luminosities for z $<$ 6 within a semi-analytic model of galaxy formation
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Realistic simulations of galaxy formation in f(R) modified gravity
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The star formation histories of dwarf galaxies in Local Group cosmological simulations
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A comparison between semi-analytical gas cooling models and cosmological hydrodynamical simulations
Jun Hou, Cedric G. Lacey, and Carlos S. Frenk
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On the correlation between the local dark matter and stellar velocities
Nassim Bozorgnia, Azadeh Fattahi, David G. Cerdeño, et al.
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Reverberation reveals the truncated disc in the hard state of GX 339-4
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Resolved galaxy scaling relations in the EAGLE simulation: star formation, metallicity, and stellar mass on kpc scales
James W. Trayford and Joop Schaye
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The local high-velocity tail and the Galactic escape speed
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The first supermassive black holes: indications from models for future observations
Stergios Amarantidis, José Afonso, Hugo Messias, et al.
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Galaxies with monstrous black holes in galaxy cluster environments
Lieke A. C. van Son, Christopher Barber, Yannick M. Bahé, et al.
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The signal of decaying dark matter with hydrodynamical simulations
Mark R. Lovell, David Barnes, Yannick Bahé, et al.
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The relationship between the morphology and kinematics of galaxies and its dependence on dark matter halo structure in EAGLE
Adrien C. R. Thob, Robert A. Crain, Ian G. McCarthy, et al.
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Large-scale redshift space distortions in modified gravity theories
César Hernández-Aguayo, Jiamin Hou, Baojiu Li, et al.
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A new approach to finding galaxy groups using Markov Clustering
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2019, MNRAS, 10.1093/mnrasl/slz045

The Auriga stellar haloes: connecting stellar population properties with accretion and merging history
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2019, MNRAS, 10.1093/mnras/stz538

The gas fractions of dark matter haloes hosting simulated ∼L* galaxies are governed by the feedback history of their black holes
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Evolution of the cold gas properties of simulated post-starburst galaxies
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The mass of the Milky Way from satellite dynamics
Thomas M. Callingham, Marius Cautun, Alis J. Deason, et al.
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The origin of galactic metal-rich stellar halo components with highly eccentric orbits
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Migrating super-Earths in low-viscosity discs: unveiling the roles of feedback, vortices, and laminar accretion flows
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The diverse evolutionary pathways of post-starburst galaxies
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The modified gravity light-cone simulation project - I. Statistics of matter and halo distributions
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Calibrated, cosmological hydrodynamical simulations with variable IMFs III: spatially resolved properties and evolution
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The aftermath of the Great Collision between our Galaxy and the Large Magellanic Cloud
Marius Cautun, Alis J. Deason, Carlos S. Frenk, et al.
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The abundances and properties of Dual AGN and their host galaxies in the EAGLE simulations
Yetli M. Rosas-Guevara, Richard G. Bower, Stuart McAlpine, et al.
2019, MNRAS, 10.1093/mnras/sty3251

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dp005: Theoretical Astrophysics at Leicester
PI: Prof. Walter Dehnen
Science Area: Astronomy & Astrophysics
Machines: Data Intensive Leicester
Institute: University of Leicester

The Temporal Requirements of Directly Observing Self-gravitating Spiral Waves in Protoplanetary Disks with ALMA
Cassandra Hall, Ruobing Dong, Ken Rice, et al.
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On the origin of wide-orbit ALMA planets: giant protoplanets disrupted by their cores
J. Humphries and S. Nayakshin
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Dynamical modelling of dwarf spheroidal galaxies using Gaussian-process emulation
Amery Gration and Mark I. Wilkinson

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Scattered light shadows in warped protoplanetary discs
Rebecca Nealon, Christophe Pinte, Richard Alexander, et al.
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Giant planets and brown dwarfs on wide orbits: a code comparison project
M. Fletcher, S. Nayakshin, D. Stamatellos, et al.
2019, MNRAS, 10.1093/mnras/stz1123

ALMA observations require slower Core Accretion runaway growth
S. Nayakshin, G. Dipierro, and J. Szulágyi
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Constraining the initial planetary population in the gravitational instability model
J. Humphries, A. Vazan, M. Bonavita, et al.
2019, MNRAS, 10.1093/mnras/stz2006

Galactic chimney sweeping: the effect of 'gradual' stellar feedback mechanisms on the evolution of dwarf galaxies
Lilian Garratt-Smithson, Graham A. Wynn, Chris Power, et al.
2019, MNRAS, 10.1093/mnras/stz2406

Ring structure in the MWC 480 disk revealed by ALMA
Yao Liu, Giovanni Dipierro, Enrico Ragusa, et al.
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dp006: Extreme QCD: Quantifying the QCD Phase Diagram lib
PI: Prof. Chris Allton
Science Area: Particle Physics
Machines: Data Intensive Leicester, Extreme Scaling Edinburgh
Institute: Swansea University

Hyperons in thermal QCD: A lattice view
Gert Aarts, Chris Allton, Davide De Boni, et al.
2019, PhRvD, 10.1103/PhysRevD.99.074503

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dp007: Strong dynamics in the structure of matter
PI: Dr Roger Horsley
Science Area: Particle Physics
Machines: Data Intensive Cambridge, Extreme Scaling Edinburgh
Institute: University of Edinburgh

Isospin splittings in the decuplet baryon spectrum from dynamical QCD+QED
R. Horsley et al.
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Patterns of flavor symmetry breaking in hadron matrix elements involving u , d , and s quarks
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2019, PhRvD, 10.1103/PhysRevD.100.114516

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dp008: UKQCD-DWF: physics with dynamical chiral quarks
PI: Dr Andreas Juettner
Science Area: Particle Physics
Machines: Data Intensive Cambridge, Extreme Scaling Edinburgh
Institute: University of Southampton

QED corrections to leptonic decay rates
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2019, PoS Lattice, 10.22323/1.334.0267

Semi-leptonic form factors for $B_s \to K\ell\nu$ and $B_s \to D_s\ell\nu$
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2019, PoS Lattice, 10.22323/1.334.0290

Electromagnetic finite-size effects to the hadronic vacuum polarization
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2019, PhRvD, 10.1103/PhysRevD.100.014508

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dp009: Non perturbative BSM dynamics
PI: Dr Antonio Rago
Science Area: Particle Physics
Machines: BG/Q
Institute: Plymouth University

Master-field simulations of O(a)-improved lattice QCD: Algorithms, stability and exactness
Anthony Francis, Patrick Fritzsch, Martin Lüscher, et al.
2019, CPhCo, 10.1016/j.cpc.2020.107355

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dp010: UKMHD Consortium: 2) Solar Atmosphere

PI: Prof. Alan Hood
Science Area: Astronomy & Astrophysics
Machines: Memory Intensive Durham, Data Intensive Cambridge
Institute: University of St Andrews

Contribution of observed multi frequency spectrum of Alfvén waves to coronal heating
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Paolo Pagano, Duncan H. Mackay, and Stephanie L. Yardley
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A Prospective New Diagnostic Technique for Distinguishing Eruptive and Noneruptive Active Regions
Paolo Pagano, Duncan H. Mackay, and Stephanie L. Yardley
2019, ApJ, 10.3847/1538-4357/ab3e42

Active Region evolution prior to magnetic flux rope ejections
P. Pagano and D. H. Mackay
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Beili Ying, Alessandro Bemporad, Silvio Giordano, et al.
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Measuring the 2D distribution of the expansion speed of solar eruptions: A first test based on synthetic coronagraphic data
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Evolution and characteristics of forced shear flows in polytropic atmospheres: large and small Péclet number regimes
V. Witzke, L. J. Silvers, and B. Favier

2019, MNRAS, 10.1093/mnras/sty2698

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dp012: Hydrodynamical Simulations of Cosmic Structure Formation at KICC
PI: Dr Debora Sijacki
Science Area: Astronomy & Astrophysics
Machines: Memory Intensive Durham, Data Intensive Cambridge
Institute: University of Cambridge

Constraints on chameleon f(R)-gravity from galaxy rotation curves of the SPARC sample
Aneesh P. Naik, Ewald Puchwein, Anne-Christine Davis, et al.
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Fast and energetic AGN-driven outflows in simulated dwarf galaxies
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Tracing the sources of reionization in cosmological radiation hydrodynamics simulations
Harley Katz, Taysun Kimm, Martin G. Haehnelt, et al.
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Modelling the observed luminosity function and clustering evolution of Ly α emitters: growing evidence for late reionization
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Consistent modelling of the meta-galactic UV background and the thermal/ionization history of the intergalactic medium
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Large Ly α opacity fluctuations and low CMB τ in models of late reionization with large islands of neutral hydrogen extending to z < 5.5
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Understanding the escape of LyC and Lyα photons from turbulent clouds
Taysun Kimm, Jérémy Blaizot, Thibault Garel, et al.
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AGN jet feedback on a moving mesh: lobe energetics and X-ray properties in a realistic cluster environment
Martin A. Bourne, Debora Sijacki, and Ewald Puchwein
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The redshift evolution of X-ray and Sunyaev-Zel'dovich scaling relations in the FABLE simulations
Nicholas A. Henden, Ewald Puchwein, and Debora Sijacki
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Cosmological simulations of dwarfs: the need for ISM physics beyond SN feedback alone
Matthew C. Smith, Debora Sijacki, and Sijing Shen
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dp015: High Performance Computing Support for Exeter Astrophysics
PI: Prof. Matthew Bate
Science Area: Astronomy & Astrophysics
Machines: Memory Intensive Durham, Data Intensive Cambridge, Data Intensive Leicester
Institute: Universiry of Exeter

The statistical properties of stars and their dependence on metallicity
Matthew R. Bate
2019, MNRAS, 10.1093/mnras/stz103

Disc formation and fragmentation using radiative non-ideal magnetohydrodynamics
James Wurster and Matthew R. Bate
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Synthetic molecular line observations of the first hydrostatic core from chemical calculations
Alison K. Young, Matthew R. Bate, Tim J. Harries, et al.
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There is no magnetic braking catastrophe: low-mass star cluster and protostellar disc formation with non-ideal magnetohydrodynamics
James Wurster, Matthew R. Bate, and Daniel J. Price
2019, MNRAS, 10.1093/mnras/stz2215

Massive star feedback in clusters: variation of the FUV interstellar radiation field in time and space
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Multiple Spiral Arms in the Disk around Intermediate-mass Binary HD 34700A
John D. Monnier, Tim J. Harries, Jaehan Bae, et al.
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The Limits of the Primitive Equations of Dynamics for Warm, Slowly Rotating Small Neptunes and Super Earths
N. J. Mayne, B. Drummond, F. Debras, et al.
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Fully scalable forward model grid of exoplanet transmission spectra
Jayesh M. Goyal, Hannah R. Wakeford, Nathan J. Mayne, et al.
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Eigenvectors, Circulation, and Linear Instabilities for Planetary Science in 3 Dimensions (ECLIPS3D)
F. Debras, N. Mayne, I. Baraffe, et al.
2019, A&A, 10.1051/0004-6361/201935582

Idealised simulations of the deep atmosphere of hot Jupiters. Deep, hot adiabats as a robust solution to the radius inflation problem
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C. L. Dobbs, E. Rosolowsky, A. R. Pettitt, et al.
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dp016: Modelling galaxy baryon physics: from cosmological to sub-galactic scales
PI: Prof. Adrianne Slyz
Science Area: Astronomy & Astrophysics
Machines: Memory Intensive Durham, Data Intensive Leicester
Institute: University of Oxford

Zooming in on supermassive black holes: how resolving their gas cloud host renders their accretion episodic
R. S. Beckmann, J. Devriendt, and A. Slyz
2019, MNRAS, 10.1093/mnras/sty2890

Growth of massive scalar hair around a Schwarzschild black hole
Katy Clough, Pedro G. Ferreira, and Macarena Lagos
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On the observed diversity of star formation efficiencies in Giant Molecular Clouds
Kearn Grisdale, Oscar Agertz, Florent Renaud, et al.
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Probing cosmic dawn with emission lines: predicting infrared and nebular line emission for ALMA and JWST
Harley Katz, Thomas P. Galligan, Taysun Kimm, et al.
2019, MNRAS, 10.1093/mnras/stz1672

Probing cosmic dawn: modelling the assembly history, SEDs, and dust content of selected z $\sim$ 9 galaxies
Harley Katz, Nicolas Laporte, Richard S. Ellis, et al.
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Magnetogenesis at Cosmic Dawn: tracing the origins of cosmic magnetic fields
Harley Katz, Sergio Martin-Alvarez, Julien Devriendt, et al.
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Understanding the escape of LyC and Lyα photons from turbulent clouds
Taysun Kimm, Jérémy Blaizot, Thibault Garel, et al.
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Massive spheroids can form in single minor mergers
R. A. Jackson, G. Martin, S. Kaviraj, et al.
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The formation and evolution of low-surface-brightness galaxies
G. Martin, S. Kaviraj, C. Laigle, et al.
2019, MNRAS, 10.1093/mnras/stz356

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dp019: High Precision B physics from Lattice QCD (HPQCD)
PI: Prof. Christine Davies
Science Area: Particle Physics
Machines: Data Intensive Cambridge
Institute: University of Glasgow

Quark mass determinations with the RI-SMOM scheme and HISQ action
A. T. Lytle, C. T. H. Davies, D. Hatton, et al.
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Meson Electromagnetic Form Factors from Lattice QCD
C. T. H. Davies, Jonna Koponen, Peter G. Lepage, et al.
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$B_s \to D_s^{(*)} l\nu$ form factors using heavy HISQ quarks
E. McLean, C. T. H. Davies, A. T. Lytle, et al.

2019, PoS Lattice, 10.22323/1.334.0281

Lattice QCD form factor for $B_s \to D_s^* l\nu$ at zero recoil with non-perturbative current renormalisation
E. McLean, C. T. H. Davies, A. T. Lytle, et al.
2019, PhRvD, 10.1103/PhysRevD.99.114512

Neutral B-meson mixing from full lattice QCD at the physical point
R. J. Dowdall, C. T. H. Davies, R. R. Horgan, et al.
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Renormalizing vector currents in lattice QCD using momentum-subtraction schemes
D. Hatton, C. T. H. Davies, G. P. Lepage, et al.
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Hadronic-vacuum-polarization contribution to the muon's anomalous magnetic moment from four-flavor lattice QCD
C. T. H. Davies et al.
2019, PhRvD, 10.1103/PhysRevD.101.034512

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dp040: Stellar Hydrodynamics, Evolution and Nucleosynthesis (SHEN)
PI: Dr Raphael Hirschi
Science Area: Astronomy & Astrophysics
Machines: Memory Intensive Durham, Data Intensive Cambridge
Institute: Keele University

Dependence of convective boundary mixing on boundary properties and turbulence strength
A. Cristini, R. Hirschi, C. Meakin, et al.
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3D Simulations and MLT. I. Renzini's Critique
W. David Arnett, Casey Meakin, Raphael Hirschi, et al.
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NuGrid stellar data set - III. Updated low-mass AGB models and s-process nucleosynthesis with metallicities Z= 0.01, Z = 0.02, and Z = 0.03
U. Battino, A. Tattersall, C. Lederer-Woods, et al.
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Uncertainties in νp-process nucleosynthesis from Monte Carlo variation of reaction rates
N. Nishimura, T. Rauscher, R. Hirschi, et al.
2019, MNRAS, 10.1093/mnras/stz2104

dp047: DISCSIM: The Formation and Evolution of Planets in the Era of ALMA
PI: Prof. Cathy Clarke
Science Area: Astronomy & Astrophysics
Machines: Data Intensive Cambridge, Data Intensive Leicester
Institute: University of Southampton

Is the ring inside or outside the planet?: the effect of planet migration on dust rings
Farzana Meru, Giovanni P. Rosotti, Richard A. Booth, et al.
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Revealing signatures of planets migrating in protoplanetary discs with ALMA multiwavelength observations
Pooneh Nazari, Richard A. Booth, Cathie J. Clarke, et al.
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Characterizing gravito-turbulence in 3D: turbulent properties and stability against fragmentation
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Dust accretion in binary systems: implications for planets and transition discs
Yayaati Chachan, Richard A. Booth, Amaury H. M. J. Triaud, et al.
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dp050: Simulating Gravitational Instabilities that Drive Vertical Structure Formation in Quiescent Prominences
PI: Dr Andrew Hillier
Science Area: Astronomy & Astrophysics
Machines: Data Centric
Institute: Universiry of Exeter

Ion-neutral decoupling in the nonlinear Kelvin-Helmholtz instability: Case of field-aligned flow
A. Hillier
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Coronal Cooling as a Result of Mixing by the Nonlinear Kelvin-Helmholtz Instability
Andrew Hillier and Iñigo Arregui
2019, ApJ, 10.3847/1538-4357/ab4795

dp051: Hadron Resonances from Lattice QCD
PI: Dr Christopher Thomas
Science Area: Particle Physics
Machines: Data Intensive Cambridge
Institute: University of Cambridge

b_1 resonance in coupled $\pi\ \omega$, $\pi\ \phi$ scattering from lattice QCD
Antoni J. Woss, Christopher E. Thomas, Jozef J. Dudek, et al.
2019, PhRvD, 10.1103/PhysRevD.100.054506

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dp058: Galaxy-scale Simulations of Star Formation
PI: Dr Rowan Smith
Science Area: Astronomy & Astrophysics
Machines: Memory Intensive Durham
Institute: University of Manchester

Strong Excess Faraday Rotation on the Inside of the Sagittarius Spiral Arm
R. Shanahan, S. J. Lemmer, J. M. Stil, et al.
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Synthetic Large-scale Galactic Filaments: On Their Formation, Physical Properties, and Resemblance to Observations
Catherine Zucker, Rowan Smith, and Alyssa Goodman
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The geometry of the gas surrounding the Central Molecular Zone: on the origin of localized molecular clouds with extreme velocity dispersions
Mattia C. Sormani, Robin G. Treß, Simon C. O. Glover, et al.
2019, MNRAS, 10.1093/mnras/stz2054

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dp060: Spectroscopy of Hot Exoplanets
PI: Dr Sergey Yurchenko
Science Area: Astronomy & Astrophysics
Machines: Data Intensive Cambridge, Data Intensive Leicester
Institute: University College London

ExoMol molecular line lists - XXXV. A rotation-vibration line list for hot ammonia
Phillip A. Coles, Sergei N. Yurchenko, and Jonathan Tennyson
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Spectroscopy of YO from first principles
Alexander N. Smirnov, Victor G. Solomonik, Sergei N. Yurchenko, et al.

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ExoMol molecular line lists XXXVI: $X^2\Pi$ - $X^2\Pi$ and $A^2\Sigma^+$ - $X^2\Pi$ transitions of SH
Maire N. Gorman, Sergei N. Yurchenko, and Jonathan Tennyson
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ExoMol line list - XXXIV. A rovibrational line list for phosphinidene (PH) in its $X^3\Sigma^-$ and $a^1\Delta$ electronic states
Jonathan Langleben, Jonathan Tennyson, Sergei N. Yurchenko, et al.
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Nonresonant Raman spectra of the methyl radical $^{12}CH_3$ simulated in variational calculations
Ahmad Y. Adam, Per Jensen, Andrey Yachmenev, et al.
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Ahmad Y. Adam, Andrey Yachmenev, Sergei N. Yurchenko, et al.
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A variationally computed room temperature line list for AsH3
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Analysis of gaseous ammonia (NH_3) absorption in the visible spectrum of Jupiter - Update
Patrick G. J. Irwin, Neil Bowles, Ashwin S. Braude, et al.
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dp064: First Principle Predictions of Large Nuclei and Nucleonic Matter
PI: Dr Carlo Barbieri
Science Area: Particle Physics
Machines: Data Intensive Leicester
Institute: University of Surrey

Shape staggering of midshell mercury isotopes from in-source laser spectroscopy compared with density-functional-theory and Monte Carlo shell-model calculations

S. Sels et al.
2019, PhRvC, 10.1103/PhysRevC.99.044306

Novel chiral Hamiltonian and observables in light and medium-mass nuclei
V. Somà, P. Navrátil, F. Raimondi, et al.
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Lepton Scattering from ^{40}Ar and Ti in the Quasielastic Peak Region
C. Barbieri, N. Rocco, and V. Somà
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Quasifree Neutron Knockout from ^{54}Ca Corroborates Arising $N = 34$ Neutron Magic Number
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Dissipation Dynamics of Nuclear Fusion Reactions
K. Wen, M. C. Barton, A. Rios, et al.
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dp065: UKMHD Consortium: 1) Solar and Planetary Interiors
PI: Prof. David Hughes
Science Area: Astronomy & Astrophysics
Machines: Memory Intensive Durham, Data Intensive Leicester
Institute: University of Sheffield

Scale Selection in the Stratified Convection of the Solar Photosphere
Mouloud Kessar, David W. Hughes, Evy Kersalé, et al.
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Force balance in convectively driven dynamos with no inertia
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Turbulent convective length scale in planetary cores
Céline Guervilly, Philippe Cardin, and Nathanaël Schaeffer
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Anelastic torsional oscillations in Jupiter's metallic hydrogen region
K. Hori, R. J. Teed, and C. A. Jones
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dp066: UKMHD Consortium: 3) Astrophysical MHD and Kinetic Simulations.
PI: Prof. Sam Falle
Science Area: Astronomy & Astrophysics
Machines: Memory Intensive Durham
Institute: University of Leeds

Angular momentum transport by the GSF instability: non-linear simulations at the equator
A. J. Barker, C. A. Jones, and S. M. Tobias
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Sheets, filaments, and clumps - high-resolution simulations of how the thermal instability can form molecular clouds
C. J. Wareing, S. A. E. G. Falle, and J. M. Pittard
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Nonaxisymmetric Hall instability: A key to understanding magnetars
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Magnetic-field evolution in a plastically failing neutron-star crust
S. K. Lander and K. N. Gourgouliatos
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Magnetic inhibition of centrifugal instability
Serguei S. Komissarov, Konstantinos N. Gourgouliatos, and Jin Matsumoto
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Momentum and energy injection by a supernova remnant into an inhomogeneous medium
J. M. Pittard
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dp079: Understanding the Milky Way and Disc Galaxies with Gaia
PI: Dr Ralph Schoenrich
Science Area: Astronomy & Astrophysics
Machines: Data Intensive Cambridge, Data Intensive Leicester
Institute: University of Oxford

Galactic rotation from Cepheids with Gaia DR2 and effects of non-axisymmetry
Daisuke Kawata, Jo Bovy, Noriyuki Matsunaga, et al.
2019, MNRAS, 10.1093/mnras/sty2623

More than just a wrinkle: a wave-like pattern in U_g versus L_z from Gaia data

Jennifer K. S. Friske and Ralph Schönrich
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Distances and parallax bias in Gaia DR2
Ralph Schönrich, Paul McMillan, and Laurent Eyer
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The chemical evolution of r-process elements from neutron star mergers: the role of a 2-phase interstellar medium
Ralph A. Schönrich and David H. Weinberg
2019, MNRAS, 10.1093/mnras/stz1126

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dp080: The Early Phases of Protostellar Disc Evolution (E-DISCS)
PI: Dr Dimitris Stamatellos
Science Area: Astronomy & Astrophysics
Machines: Data Intensive Cambridge, Data Intensive Leicester
Institute: University of Central Lancashire

Giant planets and brown dwarfs on wide orbits: a code comparison project
M. Fletcher, S. Nayakshin, D. Stamatellos, et al.
2019, MNRAS, 10.1093/mnras/stz1123

Observational signatures of outbursting protostars - I: From hydrodynamic simulations to observations
Benjamin MacFarlane, Dimitris Stamatellos, Doug Johnstone, et al.
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Observational signatures of outbursting protostars - II. Exploring a wide range of eruptive protostars
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2019, MNRAS, 10.1093/mnras/stz1570

ALMA reveals a pseudo-disc in a proto-brown dwarf
B. Riaz, M. N. Machida, and D. Stamatellos
2019, MNRAS, 10.1093/mnras/stz1032

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dp100: Photoevaporation and Properties of the Circumstellar Environment
PI: Dr James Owen
Science Area: Astronomy & Astrophysics
Machines: Data Intensive Leicester
Institute: Imperial College London

The first multidimensional view of mass loss from externally FUV irradiated protoplanetary discs
Thomas J. Haworth and Cathie J. Clarke
2019, MNRAS, 10.1093/mnras/stz706

Testing the stability of supersonic ionized Bondi accretion flows with radiation hydrodynamics
Bert Vandenbroucke, Nina S. Sartorio, Kenneth Wood, et al.
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Thermal emission from bow shocks. I. 2D hydrodynamic models of the Bubble Nebula
Samuel Green, Jonathan Mackey, Thomas J. Haworth, et al.
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Observing substructure in circumstellar discs around massive young stellar objects
M. R. Jankovic, T. J. Haworth, J. D. Ilee, et al.
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dp101: Engineering Dwarfs at Galaxy Formations Edge
PI: Prof. Justin Read
Science Area: Astronomy & Astrophysics
Machines: Data Intensive Leicester
Institute: University of Surrey

EDGE: The Origin of Scatter in Ultra-faint Dwarf Stellar Masses and Surface Brightnesses
Martin P. Rey, Andrew Pontzen, Oscar Agertz, et al.
2019, ApJ, 10.3847/2041-8213/ab53dd

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dp104: Simba: New Cosmological Simulations to Study Galaxy-Black Hole Co-evolution
PI: Prof. Romeel Davé
Science Area: Astronomy & Astrophysics
Machines: Memory Intensive Durham
Institute: University of Edinburgh

SIMBA: Cosmological simulations with black hole growth and feedback
Romeel Davé, Daniel Anglés-Alcázar, Desika Narayanan, et al.
2019, MNRAS, 10.1093/mnras/stz937

Black hole - Galaxy correlations in SIMBA

Nicole Thomas, Romeel Davé, Daniel Anglés-Alcázar, et al.
2019, MNRAS, 10.1093/mnras/stz1703

The dust-to-gas and dust-to-metal ratio in galaxies from z = 0 to 6
Qi Li, Desika Narayanan, and Romeel Davé
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Mergers, starbursts, and quenching in the SIMBA simulation
Francisco Rodríguez Montero, Romeel Davé, Vivienne Wild, et al.
2019, MNRAS, 10.1093/mnras/stz2580

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dp105: Impact of Reionization on the Intergalactic Medium
PI: Dr Jose Oñorbe
Science Area: Astronomy & Astrophysics
Machines: Memory Intensive Durham
Institute: University of Edinburgh

Anomaly in the Opacity of the Post-reionization Intergalactic Medium in the Lyα and Lyβ Forest
Anna-Christina Eilers, Joseph F. Hennawi, Frederick B. Davies, et al.
2019, ApJ, 10.3847/1538-4357/ab2b3f

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dp121: Dynamic Accretion in Astrophysics
PI: Dr Chris Nixon
Science Area: Astronomy & Astrophysics
Machines: Data Intensive Leicester
Institute: University of Leicester

Tidal Disruption Events: The Role of Stellar Spin
Elen C. A. Golightly, Eric R. Coughlin, and C. J. Nixon
2019, ApJ, 10.3847/1538-4357/aafd2f

What is wrong with steady accretion discs?
C. J. Nixon and J. E. Pringle
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On the Diversity of Fallback Rates from Tidal Disruption Events with Accurate Stellar Structure
E. C. A. Golightly, C. J. Nixon, and E. R. Coughlin
2019, ApJ, 10.3847/2041-8213/ab380d

dp122: UKMHD3: Astrophysical MHD
PI: Dr Graeme Sarson
Science Area: Astronomy & Astrophysics
Machines: Data Intensive Leicester
Institute: Newcastle University

Three-dimensional Simulations of Massive Stars. I. Wave Generation and Propagation
P. V. F. Edelmann, R. P. Ratnasingam, M. G. Pedersen, et al.
2019, ApJ, 10.3847/1538-4357/ab12df

Evolution of galactic magnetic fields
L. F. S. Rodrigues, L. Chamandy, A. Shukurov, et al.
2019, MNRAS, 10.1093/mnras/sty3270

dp124: Three-Dimensional Models of Variability in Astrophysical Masers
PI: Dr Malcolm Gray
Science Area: Astronomy & Astrophysics
Machines: Data Intensive Leicester
Institute: University of Manchester

Maser flare simulations from oblate and prolate clouds
M. D. Gray, J. Baggott, J. Westlake, et al.
2019, MNRAS, 10.1093/mnras/stz1137

dp125: RAFMUS Gen: Radiations Feedback in Multiscale Stellar Genesis
PI: Dr Bert Vandenbroucke
Science Area: Astronomy & Astrophysics
Machines: Data Intensive Leicester
Institute: University of St Andrews

Radiation hydrodynamics simulations of the evolution of the diffuse ionized gas in disc galaxies
Bert Vandenbroucke and Kenneth Wood
2019, MNRAS, 10.1093/mnras/stz1841

dp127: Galactic Dynamics in the Era of Gaia

PI: Prof. Victor Debattista
Science Area: Astronomy & Astrophysics
Machines: Data Intensive Cambridge
Institute: University of Central Lancashire

The Formation of Compact Elliptical Galaxies in the Vicinity of a Massive Galaxy: The Role of Ram-pressure Confinement
Min Du, Victor P. Debattista, Luis C. Ho, et al.
2019, ApJ, 10.3847/1538-4357/ab0e0c

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dp128: Extreme Gravity and Gravitational Waves
PI: Dr Ulrich Sperhake
Science Area: Astronomy & Astrophysics
Machines: Data Intensive Cambridge
Institute: University of Cambridge

Amplification of superkicks in black-hole binaries through orbital eccentricity
U. Sperhake, R. Rosca-Mead, D. Gerosa, et al.
2019, PhRvD, 10.1103/PhysRevD.101.024044

High-energy collision of black holes in higher dimensions
Ulrich Sperhake, William Cook, and Diandian Wang
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Inverse-chirp signals and spontaneous scalarisation with self-interacting potentials in stellar collapse
Roxana Rosca-Mead, Christopher J. Moore, Michalis Agathos, et al.
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End point of nonaxisymmetric black hole instabilities in higher dimensions
Hans Bantilan, Pau Figueras, Markus Kunesch, et al.
2019, PhRvD, 10.1103/PhysRevD.100.086014

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dp129: Wave-Particle Diffusion in the Inhomogeneous Magnetic Fields of the Earth's Outer Radiation Belt
PI: Dr Oliver Allanson
Science Area: Astronomy & Astrophysics
Machines: Data Intensive Cambridge
Institute: University of Reading

Particle-in-cell Experiments Examine Electron Diffusion by Whistler-mode Waves: 1. Benchmarking With a Cold Plasma

O. Allanson, C. E. J. Watt, H. Ratcliffe, et al.
2019, JGRA, 10.1029/2019JA027088

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dp130: SNDUST: Dust Survival Rates in Supernova Remnants
PI: Prof. Mike Barlow
Science Area: Astronomy & Astrophysics
Machines: Data Intensive Cambridge
Institute: University College London

Dust survival rates in clumps passing through the Cas A reverse shock - I. Results for a range of clump densities
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