

Alex Dunhill

Curriculum vitae

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Jeremiah Horrocks Institute
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Employment

- July 2015 – Present **Jeremiah Horrocks Institute, University of Central Lancashire**
Postdoctoral Research Associate
- Nov 2013 – July 2015 **Instituto de Astrofísica, Pontificia Universidad Católica de Chile**
Postdoctoral Research Associate

Education

- Oct 2010 – Oct 2013 **Theoretical Astrophysics Group, University of Leicester**
PhD, Theoretical Astrophysics. Supervisor: Dr Richard Alexander
Thesis: *Adventures with planets & binaries in accretion discs*
- Sept 2007 – June 2010 **University of Sheffield**
Mphys, Physics with Astronomy

Research interests

My research focuses on the the outcome of interactions between accretion discs and planets, binaries and black holes. I am primarily concerned with how this plays out in young planetary and stellar binary systems, with a particular focus on the role of orbital eccentricity. I also work on similar mechanisms in supermassive black hole binary systems.

Teaching experience

- 2010 – 2011 **University of Leicester**
- Supervised C computing lab for second-year physics undergraduates.
 - Seminar leader for second-year physics undergraduates in condensed matter physics & electromagnetism.
- 2014 **PUC**
- Presented a pedagogical introduction to SPH.

Skills

- Experienced user of the smoothed particle hydrodynamics (SPH) code GADGET-2.
- Wrote an N-body integrator and a 1D viscous accretion disc code from scratch
- Frequent user of high performance computing (HPC) cluster environments performing and analysing large parallel simulations, highly proficient in Fortran and C computing languages and MPI parallel computing.

List of publications

- 1) *Planet formation signposts: Observability of circumplanetary disks via gas kinematics*
S. Perez, **A. Dunhill**, S. Casassus, P. Roman, J. Szulágyi et al., ApJL, in press
arXiv:1505.06808
- 2) *Accretion kinematics through the warped transition disk in HD142527 from resolved CO(6-5) observations*
S. Casassus, S. Marino, S. Perez, P. Roman, **A. Dunhill** et al., ApJ, in press
arXiv:1505.07732
- 3) *Precession and accretion in circumbinary discs: The case of HD104237*
A. C. Dunhill, J. Cuadra & C. Dougados, 2015, MNRAS, 448, 3545
arXiv:1411.0687
- 4) *ID accretion discs around eccentric planets: observable near-infrared variability*
A. C. Dunhill, 2015, MNRAS, 448, L67
arXiv:1411.1056
- 5) *Misaligned accretion on to supermassive black hole binaries*
A. C. Dunhill, R. D. Alexander, C. J. Nixon & A. R. King, 2014, MNRAS, 445, 2285
arXiv:1409.3842
- 6) *The curiously circular orbit of Kepler-16b*
A. C. Dunhill & R. D. Alexander, 2013, MNRAS, 435, 2328
arXiv:1308.0596
- 7) *A limit on eccentricity growth from global 3D simulations of disc-planet interactions*
A. C. Dunhill, R. D. Alexander & P. J. Armitage, 2013, MNRAS, 428, 3072
arXiv:1210.6035

Recent conferences & talks

- July 2015 *'Disc dynamics and planet formation', Pyla, Cyprus*
Contributed talk, **'Eccentric planets in discs'**
- Mar 2015 *'Unveiling the AGN - galaxy evolution connection', Puerto Varas, Chile*
Conference poster, **'Precession and accretion in circumbinary discs'**
- Jan 2015 *University of Sheffield, Sheffield, UK*
Lunch talk, **'Eccentric adventures in circumbinary discs'**
- Nov 2014 *'Millenium ALMA Disc Nucleus workshop', Santiago, Chile*
Contributed talk, **'Modelling discs around (eccentric) planets'**
- Sept 2014 *'Living together: planets, host stars & binaries', Litomyšl, CZ*
Contributed talk, **'Eccentric adventures in circumbinary discs'**
- July 2014 *'Planetary systems across the HR Diagram', Cambridge, UK*
Conference poster, **'The curiously circular orbit of Kepler-16b'**
- Mar 2014 *'CATA annual workshop 2014', Santiago, Chile*
Contributed talk, **'The curiously circular orbit of Kepler-16b'**
- Jan 2014 *'SOCHIAS XI annual meeting', Los Andes, Chile*
Contributed talk, **'Prograde vs. retrograde circumbinary disc accretion'**
- July 2013 *'Protostars & Planets VI', Heidelberg, Germany*
Conference poster, **'The curiously circular orbit of Kepler-16b'**