JONATHAN DAVID HENSHAW

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EXPERIENCE & EDUCATION

POST-DOCTORAL RESEARCH ASSISTANT - Liverpool John Moores University, UK (2014-present)

DOCTOR OF PHILOSOPHY (PH. D.), ASTROPHYSICS - University of Leeds, UK (2010 – 2014)
THESIS: 'Kinematics and physical structure of a highly filamentary Infrared Dark Cloud'

MASTER OF PHYSICS (MPHYS.) - University of Leeds, UK (2005 – 2009)
Physics with Astrophysics - First Class

RESEARCH INTERESTS

My primary field of research focuses on the earliest stages of massive star and stellar cluster formation. In particular, I am interested in the structure, kinematics, and dynamics of molecular clouds. I have recently investigated the kinematics of the molecular gas within the inner 250 pc of the Milky Way; the Central Molecular Zone. The ultimate goal of this project is to try and understand the formation processes of some of the most massive stars and stellar clusters within the Galaxy.

OBSERVING TIME

2015	NOEMA	*Connecting a massive protostar factory to a filamentary network*	Co-I, 31.4 hrs
2014	IRAM 30 m	*Flow-driven formation of molecular cloud filaments: a kinematic study of the dense gas in IRDCs*	PI, 38.8 hrs
2014	ALMA	*Dissecting filaments with ALMA: Unveiling the dynamic properties of dense cores within a massive IRDC*	PI, 1.6 hrs
2013	IRAM 30 m	*Flow-driven formation of molecular cloud filaments: Widespread SiO in IRDCs*	Co-I, 62.2 hrs
2012	IRAM 30 m	*Large scale mapping of the dense gas in IRDCs*	PI, 20.0 hrs
2012	PdBI	*Dense gas structure and kinematics in a quiescent Infrared Dark Cloud*	PI, 20.0 hrs

TECHNICAL SKILLS

– Experience in writing data analysis & imaging scripts in multiple languages (IDL, Python).
– Developing algorithms for use with large data sets (IDL).
– Software: SCOUSE; Semi-automated multi-COmponent Universal Spectral line fitting Engine (Henshaw et al. 2016).
– Familiar with Radiative Transfer codes (RADEX).
– GILDAS (CLASS, MAPPING, GREG, CLIC, ASTRO), KARMA (KVIS), Starlink (GAIA), VisIt
– UNIX/LINUX, Windows, IDL, Python, Fortran-77/90, LaTeX, emacs, Microsoft Office.

SELECTED SCIENTIFIC TALKS & PRESENTATIONS

2015	"*The complex kinematics of (massive) star forming regions*" CAS seminar, The Center for Astrochemical Research, MPE, Germany	Invited talk
2015	"*Gas kinematics in massive and dense molecular clouds*" The Kinematics of Star Formation, RAS, UK	Contributed talk
2014	"*The complex kinematics of (massive) star forming regions*" St. Andrews University, UK	Invited talk
2014	"*The dynamical properties of dense filaments in the Infrared Dark Cloud G035.39-00.33*" Mass assembly from clouds to clusters, Sexten, Italy	Contributed talk
2013	"*Complex kinematics in a filamentary IRDC*" Protostars & Planets VI, Heidelberg, Germany	Poster presentation
2013	"*The kinematic structure of dark clouds*" Postgraduate Research Symposium, University of Leeds, UK	Contributed talk
2013	"*Interlocking filaments in G035.39-00.33*" Havard-Smithosonian Center for Astrophysics, US	Contributed talk
2011	"*Kinematics in a filamentary IRDC*" The molecular universe, IAU symposium 280, Toledo, Spain	Poster presentation

TEACHING, OUTREACH & RESPONSIBILITIES

Star and Stellar cluster formation/evolution weekly group meeting organiser. (2014 – present)

Supporting masters student projects. (2013 – 2015)

Providing technical support and assisting supervision of summer student projects. (2012 – 2014)

Telescope tour guide and demonstrator for open days, University of Leeds. (2010 – 2014)

Undergraduate Demonstrator, University of Leeds. (2010 – 2014)

- Lab experiments: Astronomical CCD imaging, gamma-ray spectroscopy
- Updated teaching manuals and resources for second year experiments.

'Astromeet' organiser (Group meetings & journal club), University of Leeds. (2012 - 2013)

PUBLICATION LIST

FIRST AUTHOR:

Molecular gas kinematics within the inner 250 pc of the Milky Way, **J. D. Henshaw** et al., 2016, MNRAS accepted, arXiv:1601.03732

Investigating the structure and fragmentation of a highly filamentary IRDC, **J. D. Henshaw**, J. E. Pineda, P. Caselli, F. Fontani, I. Jimenez-Serra, J. C. Tan

The dynamical properties of dense filaments in the infrared dark cloud, G035.39-00.33, **J. D. Henshaw**, P. Caselli, I. Jimenez-Serra, F. Fontani, J. C. Tan, 2014, MNRAS, 440, 2860

Complex, quiescent kinematics in a highly filamentary infrared dark cloud, **J. D. Henshaw**, P. Caselli, F. Fontani, I. Jimenez-Serra, J. C. Tan, A. K. Hernandez, 2013, MNRAS, 417, 2950

CO-AUTHOR:

Widespread deuteration across the IRDC G035.39-00.33, A. T. Barnes, **J. D. Henshaw**, P. Caselli, S. Kong, I. Jimenez-Serra, F. Fontani, J. C. Tan, 2014, MNRAS, submitted

Constraining globular cluster formation through studies of young massive clusters - V. ALMA observations of clusters in the Antennae, I. Cabrera-Ziri, N. Bastian, S. N. Longmore, C. Brogan, K. Hollyhead, S. S. Larsen, B. Whitmore, K. Johnson, R. Chandar, **J. D. Henshaw**, B. Davies, J. E. Hibbard, MNRAS, 448, 2224

Gas kinematics and excitation in the filamentary IRDC G035.39-00.33, I. Jimenez-Serra, P. Caselli, F. Fontani, J. C. Tan, **J. D. Henshaw**, J. Kainulainen, A. K. Hernandez, 2014, MNRAS, 439, 1996

CONFERENCE CONTRIBUTIONS:

Complex kinematics in a highly filamentary IRDC, **J. D. Henshaw**, P. Caselli, I. Jimenez-Serra, F. Fontani, J. C. Tan, 2014, Protostars and Planets VI, Heidelberg, July 15-20, 2013. Poster 1S021

Physical/chemical structure and kinematics of an extremely filamentary Infrared Dark Cloud, **J. D. Henshaw**, P. Caselli, I. Jimenez-Serra, F. Fontani, J. C. Tan, IAU Symposium 280, Toledo, may 2011, 194

CO gas kinematics and excitation in a filamentary IRDC: Filament-filament interaction and accretion processes, I. Jimenez-Serra, P. Caselli, F. Fontani, J. C. Tan, **J. D. Henshaw**, J. Kainulainen, A. K. Hernandez, Protostars and Planets VI, Heidelberg, July 15-20, 2013. Poster 1S034