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From Interstellar Clouds to Star-forming Galaxies: Universal Processes?

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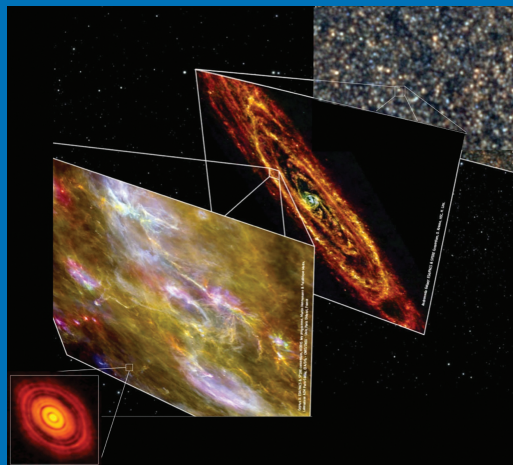
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FROM INTERSTELLAR CLOUDS TO STAR-FORMING GALAXIES:
UNIVERSAL PROCESSES?

IAU SYMPOSIUM 315

COVER ILLUSTRATION:

Overview of the star-forming structures which were discussed in Symposium 315. From top right to bottom left: High-redshift star-forming galaxies as observed by Herschel in the GOODS-N deep field (HerMES project); Andromeda galaxy as imaged by Herschel (HELGA project); structure of the Cygnus X Giant Molecular Cloud as revealed by Herschel in our own galaxy (HOBYS project); detailed substructures unveiled by ALMA in the protoplanetary disk surrounding the young star HL Tauri.

IAU SYMPOSIUM PROCEEDINGS SERIES

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FROM INTERSTELLAR CLOUDS TO STAR-FORMING GALAXIES: UNIVERSAL PROCESSES?

PROCEEDINGS OF THE 315th SYMPOSIUM
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Table of Contents

Preface	ix
The Organizing Committee.....	x
Atomic and molecular phases of the ISM	
Atomic and Molecular Phases of the Interstellar Medium	1
<i>M.-M. Mac Low</i>	
Accretion Onto the Milky Way: The Smith Cloud	9
<i>F. J. Lockman</i>	
Resolving the Transition from Molecular to Atomic at 1/5 Solar Metallicity in the Small Magellanic Cloud.....	13
<i>K. E. Jameson, A. D. Bolatto, M. Wolfire, M. Rubio, R. H. Camus & the HS Collaboration</i>	
Excitation of molecular gas in galaxies	
Astrochemistry in external galaxies: how to use molecules as probes of their physical conditions	17
<i>S. Viti</i>	
High-J CO Intensity Measurements for Galaxies Observed by the Herschel FTS	26
<i>J. Kamenetzky, N. Rangwala, J. Glenn, P. Maloney & A. Conley</i>	
Molecules in galaxies as tracers of ISM properties and star formation rates	
Giant Molecular Cloud Populations in Nearby Galaxies.....	30
<i>A. Hughes, S. Meidt, D. Colombo, A. Schruba, E. Schinnerer, A. Leroy, T. Wong & the PAWS, MAGMA, CANON and M31-CARMA survey teams</i>	
Feedback Regulated Turbulence, Magnetic Fields, and Star Formation Rates in Galactic Disks.....	38
<i>C.-G. Kim & E. C. Ostriker</i>	
Molecules in Action: Extragalactic ISM at high resolution	42
<i>S. Martín</i>	
Probing star formation relations of mergers and normal galaxies across the CO ladder	49
<i>T. R. Greve</i>	
Structure and evolution of interstellar clouds	
Properties of interstellar filaments as derived from <i>Herschel</i> , <i>Planck</i> , and molecular line observations	53
<i>D. Arzoumanian, P. André & F. Boulanger</i>	
The Formation and Destruction of Molecular Clouds and Galactic Star Formation	61
<i>S. I. Inutsuka, T. Inoue, K. Iwasaki, T. Hosokawa & M. I. N. Kobayashi</i>	

Connecting the density structure of molecular clouds with star formation	69
<i>J. Kainulainen</i>	
Origin and universality of the IMF	
An Observational Perspective of the IMF: Progress and Challenges	73
<i>S. S. R. Offner</i>	
The role of interstellar filaments in regulating the star formation efficiency and shaping the initial mass function	81
<i>V. Könyves & P. André</i>	
Formation and evolution of dense cores	
Molecular cloud fragmentation and core collapse	85
<i>S. Basu</i>	
SCUBA2 observations of prestellar cores	91
<i>D. Ward-Thompson & K. Pattle, on behalf of the JCMT and Herschel-SPIRE Gould Belt Consortia</i>	
Observational studies of the formation and evolution of dense cores	95
<i>M. Tafalla</i>	
Numerical simulation of star formation in filamentary dark molecular clouds . . .	103
<i>P. S. Li, R. I. Klein & C. F. McKee</i>	
Formation and evolution of protostellar disks	
From disks to planets: observational insights	107
<i>A. Isella</i>	
Small-scale properties of Class 0 protostars from the CALYPSO IRAM-PdBI survey	114
<i>A. Maury, P. André, S. Maret, A. Belloche, C. Codella, S. Cabrit, F. Gueth & CALYPSO collaboration</i>	
Theory of Protostellar Disk Formation	118
<i>Z.-Y. Li, R. Krasnopolsky & H. Shang</i>	
SMA and ALMA studies of protoplanetary disk formation around low-mass protostars	126
<i>S. Takakuwa, N. Ohashi, H.-W. Yen, T.-L. Chou, K. Saigo, M. Saito, Y. Aso, Y. Aikawa, S. Koyamatsu, M. N. Machida, S. Z. Takahashi, K. Tomida & K. Tomisaka</i>	
Formation and early evolution of stellar clusters	
Formation of star clusters: Models and simulations	130
<i>P. C. Myers</i>	
The ALMA view of the Antennae galaxy collision: How galaxy interaction triggers the formation of super star clusters	138
<i>C. N. Herrera, F. Boulanger, E. G. Falgarone, G. Pineau des Forêts, S. García-Burillo, D. Iono & P. Guillard</i>	

A multi-wavelength classification system for the evolution of star clusters	142
<i>B. C. Whitmore, C. Brogan, R. Chandar, A. Evans, J. Hibbard, K. Johnson, A. Leroy, G. Privon, A. Remijan & K. Sheth</i>	
Comparison of low-mass and high-mass star formation	
HOBYS and W43-HERO: Two more steps toward a Galaxy-wide understanding of high-mass star formation	146
<i>F. Motte, S. Bontemps & J. Tigé</i>	
Comparison of Low-Mass and High-Mass Star Formation	154
<i>J. C. Tan</i>	
Central Molecular Zone of the Milky Way: Star Formation in an extreme Environment	163
<i>J. Kauffmann</i>	
Star formation laws, rates, thresholds in galaxies	
Star formation rates, laws, thresholds	167
<i>S. Walch</i>	
Local Physics and Star Formation in Galaxies	175
<i>A. K. Leroy, F. Bigiel, A. Hughes, E. Schinnerer, A. Usero & the PAWS, EMPIRE, and HERACLES Dense Gas Collaborations</i>	
Star Formation Thresholds: The View from Inside the Galaxy	183
<i>J. Di Francesco</i>	
Nearby universe (dwarfs and massive systems, ellipticals, spirals)	
How does metallicity affect the gas and dust properties of galaxies?	191
<i>S. C. Madden, D. Cormier & A. Rémy-Ruyer</i>	
Molecular gas in galaxies: changing conditions from disks to starbursts	199
<i>C. D. Wilson</i>	
AGN, Starbursts, Feedback	
Gas flows in galactic nuclei: observational constraints on BH-galaxy coevolution	207
<i>S. García-Burillo</i>	
High resolution ALMA observations of dense molecular medium in the central regions of active galaxies	215
<i>K. Kohno, R. Ando, A. Taniguchi, T. Izumi & T. Tosaki</i>	
AGN feedback and star formation in ETGs: negative and positive feedback	224
<i>L. Ciotti, J. P. Ostriker, A. Negri, S. Pellegrini, S. Posacki & G. Novak</i>	
Main-sequence disks versus starburst galaxies	
Evolution of the ISM in main-sequence versus starburst galaxies: A motivation for molecular deep fields	228
<i>M. Aravena</i>	

Interactions and star formation	236
<i>J. H. Knapen, M. Cisternas & M. Querejeta</i>	
Comparison of low and high redshift star formation	
The Evolution of gas content and Star Formation from $z=3$ to $z=0$	240
<i>F. Combes & the PHIBSS collaboration</i>	
Theoretical considerations for star formation at low and high redshift	247
<i>B. G. Elmegreen</i>	
Molecular gas, stars, and dust in sub- L^* star-forming galaxies at $z \sim 2$: Evidence for universal star formation and non-universal dust-to-gas ratio	254
<i>M. Dessauges-Zavadsky, M. Zamojski, D. Schaerer, F. Combes, E. Egami, P. Sklias, M. A. Swinbank, J. Richard & T. Rawle</i>	
On the Variation of Gas Depletion Time	258
<i>D. Utomo, L. Blitz, A. Bolatto, T. Wong, A. Leroy, S. Vogel & EDGE-CALIFA Collaboration</i>	
Author index	262
Poster index	264

Preface

The link between the structure of the interstellar medium in galaxies and the star formation process on both local and global scales is one of the fastest growing areas of astrophysical research. The availability of wide-field far-infrared and submillimeter surveys with, e.g., the *Spitzer*, *Herschel*, *Planck*, *Wise*, and *Akari* space observatories, coupled with the much improved capabilities of ground-based millimeter and submillimeter interferometers, have led to spectacular and decisive steps forward in our understanding of star formation modes from solar system scales (tens of AUs) to global (kpc) scales in galaxies.

The goal of Symposium 315 was to start building up a coherent picture of how star formation is fuelled on a wide range of scales. Our ambition was to bring together researchers working on star formation throughout the Universe from nearby clouds to local galaxies to the first star-forming galaxies at high redshift, and to make connections between the most recent observations and the most advanced numerical simulations. We wished to foster discussions around the fundamental question of whether the dominant mode of star formation is quasi-universal or environment-dependent, we encouraged debates on a number of critical issues such as the origin and universality of the stellar initial mass function, the nature of star formation ‘laws’, and the role of feedback.

We are grateful to the SOC members for their help, exquisite expertise and generous share of their time, and we warmly thank all the participants for the high quality of their talks and posters. May these proceedings reflect the enthusiasm we put in the organisation of this symposium that was held during the 2015 IAU general assembly.

Lausanne / Saclay / Groningen, Spring 2016,

Pascale Jablonka, Philippe André, and Floris van der Tak, co-chairs of the SOC

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