

Steven D. Lord - Curriculum Vita

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Education

- 9/1979-8/1987 University of Massachusetts, Ph.D. in Astronomy.
 - Dissertation: "The Role of Molecular Clouds in the Star Formation Process as Observed in Two Grand Design Spiral Galaxies"
 - Advisor: Dr. Steven Strom
- 9/1975-6/1979 University of Massachusetts, M.S. in Electrical and Computer Engineering.
 - Thesis: "Digital Autocorrelation Spectroscopy at a Radio Astronomy Observatory"
 - Advisor: Dr. Francis S. Hill Jr
- 9/1971-6/1975 Tufts University, B.S. in Engineering. Major: Applied Mathematics and Computer Science

Continuing Education

- 3/2001 UCLA Extension, Technical Management Program.

Work Experience

- 8/2016-date Adjunct Faculty in Astronomy, Cal State LA, Los Angeles CA
 - Course: Principles of Astronomy
- 8/2016-date Adjunct Faculty in Astronomy, Citrus College, Glendora, CA
 - Courses: Life in the Universe; Stellar Astronomy
- 8/2015-date Adjunct Faculty in Astronomy, Chaffey College, Rancho Cucamonga, CA
 - Courses: Stars and Galaxies; The Solar System and Planets
- 1/2014-date: Senior Research Scientist, SETI Institute, Mountain View, California
- 10/2014-11/2014: Visiting Professorship for Senior International Scientists, Purple Mountain Observatory, Nanjing, China
- 11/1992-1/2014: Senior Scientist, Infrared Processing and Analysis Center, Pasadena, California Institute of Technology
 - 5/2012-date: Herschel PACS Instrument Scientist
 - 9/2001-4/2012: Herschel HIFI Instrument Scientist
 - 1/2004 – date Member, GOALS Team (Great Observatories All-sky LIRG Survey)
 - 6/1998-9/2001: Task Lead, NASA Herschel Science Center at IPAC
 - 8/1999-10/2000: Acting Project Manager, ISO Group at IPAC
 - 11/1992-8/1999: Lead NASA Instrument Scientist for the ISO Long Wavelength Spectrometer
 - 11/1995-9/2003 Lead, ISO Spectral Analysis Package (ISAP) International Development Team
 - 11/1995-9/2003 Member, ISO LWS Consortium, Extragalactic and Calibration Groups
- 1/2002-12/2009: Member - SOFIA Science Steering Group
- 6/1997-12/2002: SOFIA Scientist, USRA
 - Lead, Web Integrated Product Team (1997-2000)
 - Member, Data Cycle System Team (1997-2002)
 - Member, Data Management Team (2000-2001)
- 11/1992-11/1996: Far Infrared Spectroscopy of Infrared Bright galaxies with the Kuiper Airborne Observatory.
- 6/1990-6/1992: Member, SIRT/MIPS Polarimetry Working Group
- 8/1989-11/1992: Post-Doctoral Research Fellow, NASA Ames Research Center, Space Science Division
 - Kuiper Airborne Observations of the ISM of Galaxies.
 - Near Infrared Spectroscopy of Starburst Galaxies.
 - Molecular (CO) Radio Interferometry of Ring Galaxies and Starburst Galaxies.
- 8/1987-8/1989: Research Associate, National Research Council, NASA Ames Research Center
 - FIR Spectroscopic Studies of SN 1987A with Kuiper Airborne Observatory.
 - Developed ATRAN, Modeling Earth Atmospheric Transmittance of Near-Infrared and Far-Infrared Radiation.
- 1979-1982: Summer Faculty Fellowships, NASA/ASEE, Research into Algorithms and Hardware for the Search for Extraterrestrial Intelligence (SETI).
- 6/1979-8/1986: Research Assistant, Five College Radio Astronomy Observatory
 - Developed software for the pointing, focus, and structural temperature control of the FCRAO 13.5m antenna.

Developed Resolution Enhancement Techniques and for Molecular Gas Observations of Spiral Galaxies.

- 9/1979-6/1985: Teaching Assistant, University of Massachusetts, Smith College, Amherst College
 - Taught Introductory Observational Astronomy.
 - Taught Astronomy Computer Labs; Optical Astronomy and Physics Labs.
- 6/1976-9/1976: Summer Employee, Arecibo Observatory
 - Developed Laser Ranging System for Antenna Surface Measurement.

Honors and Societies

- 2014: Awarded the Visiting Professorship for Senior International Scientists of the Chinese Academy of Sciences
- 2011: NASA Public Service Group Achievement Award "For outstanding technical support to the Herschel Time Allocation Committee as part of the first Herschel general observer call and achieving a 45% US proposal success rate."
- 2010: NASA Group Achievement Award to the Herschel HIFI Integration and Test Team "For significant achievement in successfully supporting Herschel HIFI Instrument integration and test activities."
- 2010: NASA Group Achievement Award to the NASA Herschel Science Center Team "For outstanding support to the US far infrared scientific community in preparation for Herschel observations."
- 2005 Telly Bronze Award Winner, "Do the Stars Really Move?" Spitzer Science Center
- 2005: AEGIS Video and Film Production Award Winner, "Do the Stars Really Move?" Spitzer Science Center
- 1992-date: Member International Astronomical Union
- 1988: NASA Group Achievement Award, Kuiper Airborne Observatory Infrared Observations of SN 1987A
- 1981-date: Member, American Astronomical Society

Grants and Funded Programs

- Herschel Open Time 2 Project 2011-2013 "Hydrogen Fluoride Absorption Toward Luminous Infrared Galaxies" PI: S. Lord
- Herschel Guaranteed Time 2 Project 2011-2013: "HIFI and PACS Observation of NGC 5102" PI: Sylvie Beaulieu
- Spitzer Cycle 8 Program 2011-2013: "Deep IRAC1,2 Imaging of the Extended Tidal Debris Fields for the Complete GOALS Sample of LIRGs (Part 2)" PI: David Sanders
- Herschel Open Time 1 Project 2010-2012: "Balancing the Energy Budget in LIRGs: A PACS Spectroscopic Survey of Luminous Infrared Galaxies in GOALS" PI: Lee Armus
- Herschel Open Time 1 Project 2010-2012: "Herschel Spectroscopic Survey of Warm Molecular Gas in Local Luminous Infrared Galaxies" PI: Nanyao Lu
- Herschel Open Time 1 Project 2010-2012: "Hi-GAL360: the crucial step toward a global understanding of star formation in the Milky Way" PI: Sergio Molinari
- Herschel Open Time 1 Project 2010-2012: "Velocity resolved HIFI spectroscopy of water lines in actively starforming galaxies" PI: Axel Weiss
- Herschel Open Time 1 Project 2010-2012: "Hydrogen Fluoride Absorption Toward Luminous Infrared Galaxies" PI: Thomas Phillips
- Herschel Open Time 1 Project 2010-2012: "Charting the Cooling Pathways in High-Speed Extragalactic Shocks" PI: Phil Appleton
- Herschel Open Time Key Project 2009-2012: "Hi-GAL: the Herschel infrared Galactic Plane Survey" PI: Sergio Molinari
- Herschel Open Time Key Project: 2009-2012 "Herschel M33 extended survey (HERMES): star-formation interplay with the ISM" PI: C. Kramer, US PI: S. Lord
- Herschel Open Time Key Project: 2009-2012 "A Herschel survey of molecular lines in (U)LIRGs: physical conditions, the nature of the power source, and a benchmark for high-z observations (Hercules)" PI: Paul van der Werf, US PI: S. Lord
- Herschel Guaranteed Time Key Project: 2009-2012 "HIFI Spectral Surveys of Star Forming Regions" PI: Cecilia Ceccarelli
- Herschel Guaranteed Time Key Project: 2009-2012 "HEXGAL (Herschel EXtraGalactic) The Physical and Chemical Conditions of the ISM in Galactic Nuclei" PI: Rolf Güsten
- Herschel Guaranteed Time Key Project: 2009-2012 "HEXOS: Herschel Observations of EXtra-Ordinary Sources: The Orion and Sgr B2 Star-Forming Regions" PI: Edwin Bergin
- Herschel Guaranteed Time Key Project: 2009-2012 "The warm and dense ISM" PI: Volker Ossenkopf
- Spitzer Cycle-5 Program 2008 "IR Observations of a Complete Unbiased Sample of Bright Seyfert Galaxies" PI: M. Malkan
- Spitzer Cycle-5 Program 2008 "High Resolution Spectral Mapping of Starburst Rings in Nearby Seyfert Galaxies", PI: J. Howell
- NASA Code S Program: 2006-2008 "Observations of Interstellar Ionized Nitrogen from the Cerro Sairecabur Telescope", PI: Jonathan Kawamura
- Spitzer Medium-Sized Program 2006-2008 "Spectroscopic Survey of a complete Sample of Luminous Infrared Galaxies, PI: Lee Armus. Origins Probe Mission Concept Study: 2004-2005 "The Astrobiology Space Infrared Explorer (ASPIRE)", PI: Scott Sandford
- GALAX Cycle 1 Program 2004-2007 "UV Properties of Luminous IR Galaxies", PI Joseph Mazzarella"Spitzer Program: 2004-2007, "Spitzer Observations of a Complete Sample of Luminous Infrared Galaxies in the Local Universe", PI: Joseph Mazzarella
- Spitzer Program: 2004-2007, "Mid-infrared Properties, Excitation Mechanisms and AGN content of LINERs -An IRS survey", PI: Eckhard Sturm
- Spitzer Program: 2004-2007, "The Evolution of Activity in Massive Gas-Rich Mergers", PI: Sylvain Villeaux
- NASA Code-S Program 2004-2007, "Observations of Interstellar Ionized Nitrogen from the Cerro Sairecabur Telescope using an all-solid-state Superconductive Hot-electron Bolometer Heterodyne Receiver", PI: Jonathan Kawamura
- ADP Grant, 2004 "Characterizing Galaxy Spectra Through Fusion of Archival Data and the Literature Using the NASA/IPAC Extragalactic Database (NED)", PI: Joe Mazzarella
- NASA Midex Phase A Study 2002 "The Astrobiology Explorer, ABE" PI: Scott Sandford
- NASA Unix Program Study, 1999-2001 "Submillimeter Astronomy Investigation of Line Spectra: SAILS", PI: Bill Langer, JPL
- Astrophysics ADP Program, 1998-2000 "Analysis Tools for IR Line and Continuum Observations", with L. Mundy and M. Wolfire.
- NASA Airborne Astronomy Program, 1995 "Far-Infrared Spectroscopy of Active Galaxies", with R. Rubin.

- US ISO Key Project, 1994-1998 "The ISM of Normal Galaxies", with G. Helou.
- NASA Airborne Astronomy Program, 1994 "The Effects of Metallicity on Star Forming Clouds in Irregular Galaxies", with S. Madden.
- NASA Airborne Astronomy Program, 1994 "Spectroscopy of the ISM in AGNs and Starburst Galaxies", with R. Rubin.
- NASA/Ames Technical Innovations Forum, 1989-1990 "Study of An Iterative Spatial-Spectral Image Rectification Scheme for Observational Astronomy", with M. R. Haas.

Talks

- December 2015, "An Introduction to the Planets, Stars, and Galaxies" Field Elementary School classes, Sierra Madres Middle School classes and Science Olympic Teams, Chaffey College Planetarium, Rancho Cucamonga
- November 2014, "The Conditions for Star Formation in the Antennae Galaxies: NGC 4038/9 as seen by Herschel PACs" at the Purple Mountain Observatory, Chinese Academy of Sciences
- November 2014, "Airships as Stratospheric Observatories" at the Purple Mountain Observatory, Chinese Academy of Sciences
- April 2013, "Atmospheric Considerations and Advantages" at the Keck Institute for Space Science (KISS) Workshop "Airships: A New Horizon for Science", Caltech, Pasadena CA. <https://www.youtube.com/watch?v=lfWFnsjSrA>
- April 2013, "ALMA Observations of Warm Molecular Gas in Nuclear Regions of Nearby LIRG NGC 34", NSF Division of Astronomical Sciences, Washington, D.C.
- October 2011, "Recent Results from the GOALS Survey", Purple Mountain Observatory, Nanjing, China
- October 2011, "A Twisted Ring in the Galactic Center", University of Nanjing, Department of Physics and Astronomy
- December 2010, "Herschel M33 Key Project HERM33ES and Operational thoughts on two Observatories: Herschel and SOFIA", An Online SOFIA_Community_Task_Force Presentation
- June 2010, "IPAC's Spectral Deconvolution Tool - Unfolding Spectra for Herschel/HIFI, CSO, ALMA SOFIA...", The Greater IPAC Technology Symposium, IPAC, Caltech.
- August 2008, "An Introduction to the Universe and the Search for E.T." (with L. Li), Yunnan Jiaotong College, Kunming, China
- October 2007, "SOFIA - The Stratospheric Observatory for the Far Infrared", at Purple Mountain Observatory, Nanjing, China
- August 2007, "The Great Observatory All Sky LIRG Survey GOALS" Meeting on the Legacy of Multi-wavelengths Surveys", Xining, China

Supervised Students

- 2015 Chaffey Undergraduate Bryan Lopez: Undergraduate Honors Project "The Big Bang"
- 2013 IPAC Visiting Graduate Fellow: George Privon, U. Virginia, Project: Dynamical Modeling of LIRGs Hosting AGN; Advisors: J. Mazzarella, S. Lord, and L. Armus
- 2012 IPAC Visiting Graduate Fellow: Jeff Rich, U. Hawaii, Project: GOALS: Evolution of Star Formation along the Merger Sequence; Advisor: S. Lord

Educational Outreach

- Coach, S. California Science Olympiad Astronomy Team. Field Elementary School, Pasadena CA. 2014 (Team tied for highest score of 60 competing schools.)
- Judge, California State Science Fair, Physics & Astronomy, 1997, 1998, 2000, 2002-2016 (18 Science Fairs)
- Grand Award Judge, Intel International Science and Engineering Fair, Physics & Astronomy, 2011, 2014
- STEAM Director (Science, Technology, Engineering, Science, Math) and Parent Education Director, 2014, Grant Writing Committee, 2015, Hastings Ranch Nursery School, Pasadena, CA.
- Talk: "Astronomy!" Pasadena Cub Scout Pack 141, November 2014
- Coach: Science Olympiad, "Starry Starry Night" Field Elementary School, Pasadena, Winter 2014-2015 (Gold-Award Team)
- Astro 101 Lectures at IPAC: 2008: "Overview of the Universe"; "Far Infrared and Millimeter Radiation"; "Astronomical Observatories - Present and Future"
- Video "Why do we see spiral arms in some galaxies?" Steve Lord, 2005
 - http://coolcosmos.ipac.caltech.edu/cosmic_classroom/ask_astronomer/video/2005-001_256.shtml
- Video "Do the stars really move?" Steve Lord 2005
 - http://coolcosmos.ipac.caltech.edu/cosmic_classroom/ask_astronomer/video/2005-002_256.shtml
- Astronomy Outreach and Classroom Visits and Mt. Palomar Observatory Tours, Valley Center Lower School, 2000, 2001, 2002
- Developed College Laboratory Exercises with IRAS Data for Harvey Mudd College, Clairmont with Prof. A. Rudolph, 1996

Science Publications (Refereed Journal Articles Marked "*")

*239 Molinari, S. et al. 2016 "Hi-GAL, the Herschel infrared Galactic Plane Survey: photometric maps and compact source catalogues. First data release for the inner Milky Way: $+68 \text{ deg} \geq l \geq -70 \text{ deg}$ " A&A 591 1499.

*238 Zhao, Y. et al. 2016 "The [NII] 205 μm Emission in Local Luminous Infrared Galaxies" ApJ 819 61.

*237 Lu, N. et al. 2015 "Measuring Star-formation Rate and Far-Infrared Color in High-Redshift Galaxies using the CO (7-6) and [NII] 205 μm Lines" ApJL 802 11.

*236 Privon, G.C. et al. 2015 "Excitation Mechanisms for HCN (1-0) and HCO⁺ (1-0) from the Great Observatories All Sky Survey" ApJ 814 39.

- *235 Boquien, M. et al. 2015 "Measuring Star Formation with Resolved Observations: the Test Case of M33" A&A 578 8.
- *234 Neill, J., et al. 2014 "Herschel Observations of Extraordinary Sources: Analysis of the Full Herschel/HIFI Molecular Line Survey of Sagittarius B2(N)" ApJ 789 8.
- *233 Lu, N., et al. 2014 "Warm Molecular Gas in Luminous Infrared Galaxies" ApJL 798 8.
- *232 Crockett, N. R., et al. 2014 "Herschel Observations of Extraordinary Sources: Analysis of the HIFI 1.2 THz Wide Spectral Survey toward Orion KL. I. Methods" ApJ 787 112.
- *231 Xu, C. K., et al. 2014 "ALMA Observations of Warm Molecular Gas and Cold Dust in NGC 34" ApJ 787 48
- *230 Monje, R. R. Lord, S., Falgarone, E., Lis, D. C., Neufeld, D. A., Phillips, T. G., Gusten, R. 2014 "Hydrogen Fluoride toward Luminous Nearby Galaxies: NGC 253 and NGC 4945" ApJ 785 22
- 229 Miller, S. H., et al. 2014 "Airships: A New Horizon for Science" Keck Institute for Space Studies (KISS), Study Report
- *228 Imani, H., et al. 2013 "Mid-infrared Atomic Fine-structure Emission-line Spectra of Luminous Infrared Galaxies: Spitzer/IRS Spectra of the GOALS Sample" ApJ 777 156
- *227. Appleton, P. et al. 2013 "Shock-enhanced C+ Emission and the detection of H₂O from Stephan Quintet's Group-wide Shock using Herschel" ApJ 777 66
- 226 Lu, N., et al. 2013 "A Herschel Spectroscopic Survey of Warm Molecular Gas in Local Luminous Infrared Galaxies" Galaxy Mergers in an Evolving Universe, 2011, Hualien, Taiwan. Editors: Sun, W., Xu, C. K., Scoville, N. Z., Sanders, D. B.. ASP Conference Proceedings, San Francisco: Astronomical Society of the Pacific, 2013, Vol 477, p.31
- *225. Diaz-Santos, T. 2013 "Explaining the [C II]157.7 μ m Deficit in Luminous Infrared Galaxies—First Results from a Herschel/PACS Study of the GOALS Sample" ApJ 774 68
- Privon, G. et al. 2013 "Testing Numerical Star Formation Prescriptions in Galaxy Mergers" AAS Meeting #222 #208.05
- *224. Stierwalt, S. et al. 2013 "Mid-infrared Properties of Nearby Luminous Infrared Galaxies. I. Spitzer Infrared Spectrograph Spectra for the GOALS Sample" ApJS 206 1
- *223. Relano, M., et al. 2013 "Spectral energy distributions of HII regions in M 33 (HerM33es)" A&A 552, 140.
- *222. Zhao, Y. et al. 2013 "A Herschel Survey of the [NII] 205 μ m Line in Local Luminous Infrared Galaxies - The [NII] 205 μ m Emission as a Star Formation Rate Indicator" ApJL 765, 13.
- *221. Meijerink, R. et al. 2013 "Evidence for CO Shock Excitation in NGC 6240 from Herschel SPIRE Spectroscopy", ApJ 762, 16.
220. Lu, N. et al. 2013 "A Herschel Spectroscopic Survey of Warm Molecular Gas in Local Luminous Infrared Galaxies" AAS Meeting #221, #157.12
219. Diaz Santos, T. et al. 2013 "The Herschel/PACS View on the Heating of the ISM in Local LIRGs" AAS Meeting #221, #157.09
- *218. Mazzarella, J. M., et al. 2012 "Investigation of Dual Active Nuclei: Outflows, Shock-Heated Gas, and Young Star Clusters in Markarian 266", AJ 144,125.
- *217 Xilouris, E. M., et al. 2012 "Cool and warm dust emission from M 33 (HerM33es)" A&A 543, 74.
- *216. Combes, F. et al. "Dust and gas power spectrum in M 33 (HERM33ES)", A&A 539, 67.
- *215. Roelfsema, P. R., et al., 2012 "In-orbit performance of Herschel-HIFI", A&A, 537, 17.
- *214. Boquien, M. et al. 2011 "Dust Heating Sources in Galaxies:The Case of M33 (HERM33ES)" AJ 142, 111.
213. Ossenkopf, et al. 2011 "The WADI key project: New insights to photon-dominated regions from Herschel observations" EAS Publications Series, Volume 52, 2011, pp.181-186.
- *212. Mookerjee, B. et al., 2011 "The Herschel M33 extended survey (HerM33es): PACS spectroscopy of the star forming region BCLMP 302" A&A 532, 152.
- *211. Molinari, S. 2011 "A 100-parsec elliptical and twisted ring of cold and dense molecular clouds revealed by Herschel around the Galactic Center" ApJL, 735, 33.
210. Crockett, N. R. et al. 2011 "Herschel Observations of EXtra-Ordinary Sources (HEXOS): Analysis of the HIFI 1.2 THz Wide Spectral Survey Toward Orion KL" International Symposium On Molecular Spectroscopy, 66th Meeting, Held 20-24 June, 2011 at Ohio State University. Abstract EFA02.
209. Crockett, N. R. et al. 2011 "Herschel Observations of EXtra-Ordinary Sources (HEXOS): Analysis of the HIFI 1.2 THz Wide Spectral Survey Toward Orion KL" 280th Symposium of the IAU, Toledo Spain, 2011.

- *208. Petric, A. O. et al. 2011 "Mid-Infrared Spectral Diagnostics of Luminous Infrared Galaxies" *ApJ* 730 28
- *207. Wang, S. et al. 2011 "Herschel observations of EXtra-Ordinary Sources (HEXOS): Methanol as a probe of physical conditions in Orion KL" *A&A*, 527, 99.
206. Pound, M. W., Wolfire, M. G., Mundy, L. G., Teuben, P. J., Lord, S. 2011 "DIRT: Dust InfraRed Toolbox", Astrophysics Source Code Library, Record: ASCL 1102.021.
205. Verley, S. et al. 2010 "The Herschel view of HII regions in M 33 (HERM33ES)" SF2A-2010: Proceedings of the Annual meeting of the French Society of Astronomy and Astrophysics. Eds.: S. Boissier, M. Heydari-Malayeri, R. Samadi and D. Valls-Gabaud, p.57
- *204. Hilly-Blant, P. et al. 2010 "Nitrogen hydrides in the cold envelope of IRAS 16293-2422" *A&A*, 521L, 52.
- *203. Gupta, H., et al. 2010, "Detection of OH⁺ and H₂O⁺ towards Orion KL", *A&A*, 521L, 47.
- *202. Rolffs, R., et al. 2010, "Reversal of Infall in SgrB2(M) revealed by Herschel/HIFI observations of HCN lines at THz frequencies", *A&A*, 521L, 46.
- *201. Persson, C. M., et al., et al. 2010, "Nitrogen hydrides in interstellar gas. Herschel/HIFI observations towards G10.6-0.4 (W31C)" *A&A*, 521L, 45.
- *200. van der Wiel, M. H. D., et al. 2010, "Herschel/HIFI observations of spectrally resolved methylidyne signatures toward the high-mass star-forming core NGC 6334I", *A&A*, 521L, 43.
- *199. Bacmann, A. et al. 2010, "First detection of ND in the solar-mass protostar IRAS16293-2422", *A&A*, 521L, 42.
- *198. Kama, M, et al. 2010, "The methanol lines and hot core of OMC2-FIR4, an intermediate-mass protostar, with Herschel-HIFI", *A&A*, 521L, 39.
- *197. Comito, C. 2010, "Herschel observations of deuterated water towards Sgr B2(M)", *A&A*, 521L, 38.
- *196. Vastel, C. et al., et al. 2010, "Ortho-to-para ratio of interstellar heavy water", *A&A*, 521L, 31.
- *195. Emprechtinger, M., et al. 2010, "The distribution of water in the high-mass star-forming region NGC 6334 I", *A&A*, 521L, 28.
- *194. Melnick, G. J., et al. 2010, "Herschel observations of extra-ordinary sources: Detection of H₂O and its isotopologues towards Orion KL", *A&A*, 521L, 27.
- *193. Lis, D. C., et al. 2010, "Herschel/HIFI measurements of the ortho/para ratio in water towards Sagittarius B2(M) and W31C", *A&A*, 521L, 26.
- *192 Joblin, C., et al. 2010, "Gas morphology and energetics at the surface of PDRs: new insights with Herschel observations of NGC 7023", *A&A*, 521L, 25.
- *191 Dedes, C., et al. 2010, "The origin of the [C II] emission in the S140 PDRs - new insights from HIFI", *A&A*, 521L, 24.
- *190. Fuente, A., et al. 2010, "Herschel observations in the ultracompact HII region Mon R2: Water in dense Photon-dominated regions (PDRs)", *A&A*, 521L, 23.
- *189. Ceccarelli, C., et al. 2010, "Herschel spectral surveys of star-forming regions. Overview of the 555-636 GHz range", *A&A*, 521L, 22.
- *188. Crockett, N. R., et al. 2010, "Herschel Observations of Extra-Ordinary Sources: The Terahertz Spectrum of Orion KL Seen at High Spectral Resolution", *A&A*, 521L, 21.
- *187. Bergin, E. A., et al. 2010, "Herschel observations of Extra-Ordinary Sources: The Present and Future of Spectral Surveys with Herschel/HIFI", *A&A*, 521L, 20.
- *186. Falgarone, E., et al. 2010, "CH+(1-0) and 13CH+(1-0) absorption lines in the direction of massive star-forming regions", *A&A* 521L, 15.
- *185. Qin, S. -L., et al 2010, "Herschel observations of extra-ordinary sources: Detecting spiral arm clouds by CH absorption lines", *A&A*, 521L, 14.
- *184. Shilke, P., et al. 2010, "Herschel observations of ortho- and para-oxidaniumyl (H₂O⁺) in spiral arm clouds toward Sgr B2(M)", *A&A*, 521L, 11.
- *183. Lis, D. C., et al. 2010, "Herschel/HIFI discovery of interstellar chloronium (H₂Cl⁺)", *A&A*, 521L, 9.
- *182. Loenen, A., F., et al. 2010, "Excitation of the molecular gas in the nuclear region of M 82", *A&A*, 521L, 2.
- *181. Weiss A., et al. 2010, "Excitation of the molecular gas in the nuclear region of M 82", *A&A*, 521L, 1.
- *180. Inami, H. et al. 2010 "The Buried Starburst in the Interacting Galaxy II Zw 096 as Revealed by the Spitzer Space Telescope", *AJ* 140 63.
179. Wang, J. et al. 2010 "Chandra High Resolution Imaging of NGC 1365 and NGC 4151" in *X-ray Astronomy 2009; Present Status, Multi-Wavelength Approach and Future Perspectives: AIP Conference Proceedings, Volume 1248, pp. 519-520.*
- *178. Falgarone, E., et al. 2010, "Strong CH⁺ J = 1-0 emission and absorption in DR21", *A&A*, 518L, 118.

- *177. Lefloch, B., et al. 2010, "CHESS: Peering into the protostellar shock L1157-B1. II. Shock dynamics", A&A, 158L, 113.
- *176. Codella, C., et al., 2010, "CHESS: Peering into the protostellar shock L1157-B1 I. Shock chemical complexity", A&A, 518L, 112.
- *175. Ossenkopf, V., et al. 2010, "Detection of interstellar oxidaniumyl: abundant H₂O⁺ towards the star-forming regions DR21, Sgr B2, and NGC6334", A&A, 518L, 111.
- *174. Phillips, T. G. "Herschel observations of EXtra-Ordinary Sources (HEXOS): Detection of hydrogen fluoride in absorption towards Orion KL", A&A, 518L, 109.
- *173. Molinari, S., et al. 2010, "Clouds, filaments and protostars: the Herschel Hi-GAL Milky Way", A&A, 518L, 100.
- *172. Ossenkopf, V., et al. 2010, "HIFI observations of warm gas in DR21: Shock versus radiative heating", A&A, 158L, 79.
- *171. Boquien, M., et al. 2010, "100 μ m and 160 μ m emission as resolved star-formation rate estimators in M33 (HERM33ES)", A&A, 158L, 70.
- *170. Verley, et al. 2010, "Properties of compact 250 μ m emission and HII regions in M33 (HERM33ES)", A&A, 158L, 68.
- *169. Kramer, C., et al. 2010, "PACS and SPIRE photometer maps of M33: First results of the Herschel M33 extended survey (HERM33ES)", A&A, 518L, 67.
- *168. Gonzalez-Alfonso, E., et al. 2010, "Herschel observations of water vapour in Markarian 231", A&A, 518L, 43.
- *167. Van der Werf, P. P., et al. 2010, "Black hole accretion and star formation as drivers of gas excitation and chemistry in Mrk231", A&A, 518L, 42.
- *166. de Graaw, Th., et al. 2010, "The Herschel-Heterodyne Instrument for the Far-Infrared (HIFI)", A&A, 518L, 6
- *165. Howell, J. 2010 "The Great Observatories All-sky LIRG Survey: Comparison of Ultraviolet and Far-infrared Properties", ApJ 715 572
- *164. Molinari, S. et al. 2010, "Hi-GAL: The Herschel Infrared Galactic Plane Survey" PASP, vol. 122, 889-914.
- 163. Molinari, S. et al. 2010, "From Clouds to Young Stellar Objects and back again: the all-in-one view from the Herschel infrared Galactic Plane Survey", 38th COSPAR Scientific Assembly. Bremen, Germany, p.2
- 162. Comito, C. Lord, S., et al. 2009, "Spectral Surveys of Star-forming Regions with Herschel/HIFI" Submillimeter Astrophysics and Technology: a Symposium Honoring Thomas G. Phillips, ASP Conference Series, Vol. 417, p. 95, Edited by D. C. Lis, J. E. Vaillancourt, P. F. Goldsmith, T. A. Bell, N. Z. Scoville, and J. Zmuidzinas.
- *161. Armus, L. et al., 2009 GOALS: The Great Observatory All-Sky LIRG Survey. PASP, 121 559
- *160. Higgin, R., Pearson, J. C., Lord, S. D., Teyssier, D. 2009, "Gas Cell Observations of Methanol from 0.6 to 1.9 Thz Using the Herschel Space Observatory Hifi Instrument", International Symposium On Molecular Spectroscopy, 64th Meeting, Abstract TH12
- *159. Veilleux, S. et al. 2009 Spitzer Quasar and ULIRG Evolution Study (QUEST). IV. Comparison of 1Jy Ultra Luminous Infrared Galaxies with Palomar-Green Quasars" ApJS, 182, 628
- 158. Howell, J. et al., 2009, "A Comparison of Non-interacting Disk Galaxies in Goals and Sings", BAAS 214 416.06
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