

Steven D. Doty

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Education:

Ph.D. (Physics): Rensselaer Polytechnic Institute, 1995 - GPA: 3.83/4.00

M.S. (Physics): Rensselaer Polytechnic Institute, 1991 - GPA: 3.83/4.00

B.S. (Physics): Rensselaer Polytechnic Institute, 1989 - GPA: 3.85/4.00 (Magna Cum Laude)

Professional Career:

Professor, 2010-present. Denison University

John and Christine Warner Professor, 2007 – 2010. Denison University

Associate Professor (Tenured), 2003-2010. Denison University

Peter Bartlett Junior Faculty Fellow, 2001, Denison University

Assistant Professor (Tenure-track), 1999 – 2003. Denison University

Assistant Professor (Tenure-track), 1997 - 1999. Metropolitan State College of Denver

Visiting Instructor, 1997. Goucher College

Junior Lecturer / Teaching Asst., 1996 - 1997. Teaching and admin. responsibilities at Johns Hopkins

Post-doctoral Fellow, 1995 - 1997. Pursued research in collaboration with D. Neufeld at Johns Hopkins

Research Fellow, 1989 - 1994. Pursued research w/ C.M. Leung, w/ DoD and Rensselaer Fellowships.

Honors & Awards:

Charles Brickman Excellence in Teaching Award: 2015

John and Christine Warner Professorship: 2007-2010

R. C. Good Faculty Fellowship: 2006

Peter Bartlett Junior Faculty Fellow: 2001-2002

College Advising Award, MSCD: 1998, 1999

International Astronomical Union Symp. #178 Prize (Outstanding presentation prize): 1996

H. B. Huntington Award (Outstanding Physics PhD graduate): 1995

NDSEG/DoD Fellowship: 1991 - 1994

NSF Fellowship (Honorable Mention): 1990

Rensselaer Fellowship: 1989 - 1990

Class of 1902 research prize (Institute-wide, senior thesis competition): 1989

G. H. Carragan Award (Outstanding senior undergraduate physics student): 1989

Perkin-Elmer Scholarship: 1986-1989

Rensselaer Scholarship: 1985-1988

Marvin L. Peterson Scholarship: 1986-1988

Professional Societies (past and present):

American Astronomical Society (member)

American Physical Society (member)

American Association of Physics Teachers (member)

Association for Women in Science (member)

Sigma Pi Sigma and Society of Physics Students (member)

Rensselaer Society of Women in Physics (co-founder and member)

Key International Scientific Teams:

Water in Star-forming regions with Herschel (WISH), Guaranteed Time Key Project,

Herschel Space Observatory: Team Scientist, 2007-2016

Professional Experience:

SERVICE

University and Departmental Service

University-wide Positions

Senior Faculty Review Board (2013-2016)

Senior Administrative Review Committee (2013-2014)

Task Force on Evaluating Teaching and Student Learning [Chair] (2014-2016)

Director of Pre-Engineering Program (1999-2003; 2010-present)

Responsible for developing and maintaining relationships with affiliated schools, curriculum regularization, scholarship selection, and recruitment and advising of students in the program.

University Council representative (2009-2011)

Representative on council to advise the President on planning and other University matters. While the focus is primarily on Strategic Planning, discussions range from admissions and retention policies to review of our GE program and the student discount rate.

Finance Committee member (2009-2012), vice-chair (2009-2011), and chair (2011-2012)

Member and vice-chair of committee to advise administration regarding University finances and financial planning. Wrote and saw through to adoption a Guidance Statement focusing on greater transparency and open planning for financial resources in an era of competing interests.

Undertook studies of future financial issues facing the institution, including consideration of the implications of rising tuition on admissions and university finances, as well as study of responses to health care expense pressures.

Personnel Committee: member (2002-2005) and chair (2003-2005)

Member and two-time chair of committee that oversaw the process of expanding the faculty by 15 positions. This included work to make the process more transparent and interactive with departments. Undertook and implemented changes to position requests and hiring procedures to enhance diversity. Other small tasks included parallelization of handbooks and normalization of external advertising of positions.

Faculty Appeals Committee (2004-2006, 2007-2009)

Served as member on a number of appeals regarding tenure and promotion decisions.

Representative to the Board of Trustees for Academic Affairs (2007-2009)

Served as a conduit between the faculty and board regarding a range of issues including teaching load, and faculty recruitment and retention, among others.

Representative to the Board of Trustees for Student Retention and Enrollment (2003-2005)

Served as a link between the faculty and board regarding a range of issues. Special focus included diversity and gender-specific performance and retention.

Co-chair of Environment Committee in Campus-Wide SWOT Analysis [Strategic Planning, DU]

Co-chair of committee charged with understanding and reporting on the campus environment (learning and living) in secondary phase of our last round of Strategic Planning. Specific areas of strength, weakness, opportunity, and threat (SWOT) were identified for planning purposes.

University Assessment Committee (2003-2004)

Representative from the Science Division to the Assessment Committee. In charge of interfacing with science departments regarding the construction, maintenance, and growth of the yearly self-assessment process.

Member of Community Rights and Standards Board (2007-present) and co-chair (2008-2011)

Member and 3-year co-chair of campus community judicial board. Responsible for member recruitment, selection, and training along with the responsible Dean and student co-chair.

Participated in many cases. While education is the ultimate goal, suspension and expulsion are also outcomes.

Member of Information Technology Committee [ITC] (2018-present), [Chair] 2018-2019

Honorary Degrees Committee (2015-present)

Search Committee for the Director of Financial Aid (2015)

Search Committee for the Vice President of Student Affairs (2010)

Gilpatrick/Lisska Center Liaison for Sciences (2014-present)

Student Commencement Speaker Committee (2004-2005)
Member of Library Advisory Committee (2000-2003)
Reader for Faculty Scholarship Award [now defunct] (2001, 2002, 2003)

Departmental Service

Chair of Search Committee for 2 Visiting Professor positions (2008-2009)
Chair of the committee. Responsible for the wording and placement of the advertisement, interaction with and recruitment of applicants, process of phone and on-campus interviews, and eventual hiring of two faculty from under-represented groups.
Author of Departmental Mentoring program guidelines (2003); Co-author of update (2016)
Member, All Departmental Search Committees (2000-2017, including chair for 2 searches)
Coordinator of Planetarium Outreach Program (2006-2011)
Created Departmental brochure (2008)
Departmental Library Liaison (1999-2002)
Departmental Computing Liaison (1999-2002)
SWE Recruitment (1996, GMI)
TA Training (JHU): 1996 [founder & organizer]
Graduate Student Program Committee (RPI): (Member (1989 - 1994), chair (1990-1993))

University Service Programs

Senior Week Bucket List Observatory Tours (2015-2018; over 750 served)
June Orientation (2001,2002,2003,2004,on leave 2005,2006,2007,2008,2010,2011,2012,2013,2014,2015, 2016, 2017, 2018)
June Orientation Interviewer (2007,2011)
August Orientation (2000,2001,2002,2003,2004,on leave 2005,2006,2007,2008,2011)
June Phone Registration (2002,2009,2010,2011,2013,2014,2015)
International Students Orientation Faculty Panel – August (2015)
Paving the Way Faculty Panel – August pre-orientation (2009)
Admissions Activities [talks, dinners, overnight programs, shows, etc.] (continuous, 1999-present)

University-wide Activities

Men at Denison (2014-2018)
Member and faculty/student/staff group focusing on enriching and normalizing the environment for men at Denison.
Fraternity President Leadership Group (2014-2018)
One of three faculty members (with David Woodyard and Jesse Schloterbeck) working with fraternity presidents in a Leadership Group to help fraternities draw upon their natural leadership strengths to work with their members and members of the Denison Community.
Posse mentor for Boston Posse 4 (2008-2012)
Mentored the 4th group of Posse students from Boston. Responsible for helping the students transition to Denison (socially and academically), and encouraging their continued persistence.
Set-up and Coordinated Anderson Lecture visit by Steven Squyres (2009-2010)

Peer Mentoring / Education / Support

Preparing Future Faculty (2002, 2008, 2010, 2012,2013,2015)
Advised and hosted multiple PhD candidates as they investigated what it means to be a faculty member. Included multiple meetings to discuss teaching, research, and service in a liberal-arts environment, as well as teaching opportunities and feedback.
Departmental mentor (for Dan Homan 2003-2006; for Riina Tehver 2010-2013)
Served as mentor for two new faculty colleagues, including (cross-)class visitations, review of research programs, advising oversight, and identification of introductory service opportunities.
New Faculty Development Panel (2003)
New Advisor Training Panel (2003,2005,2008)
Junior Observers Program [co-founder] (2000-2003)

Co-founded program in which pre-tenure faculty would visit each other's classes to (a) provide feedback, and (b) promote cross-pollination.

Presenter at Faculty Technology Showcase / Technology Vignettes (1999, 2006, 2007, 2009)

Produced "Podcasts about Podcasting" w/ E. Winters, series for iTunesU / Denison website

Teaching Matters Presenter (2001,2008,2014,2018)

Fall Faculty Conference Table Leader (2007)

Non-Denison Student Mentoring

Host / shadow for OSU female science student (PFF-like experience) Jessica Hanzlik (2007)

High school science student shadowing

2004: Chris Klein

2006: Kirsten Larson, Pickerington High School

2007: Harvey Field

2008: Kurt van Ness, Zak Burkley, Granville High School

2015: Scott Monnin, Granville High School

Primary school student shadowing: K. Laws (2008)

Q&A Resource for High School Student: Alisha Hobbs (2009)

Community Outreach Related to Professional Position

Astronomy Planetarium Shows (DU): 1999 – present

Astronomy Open Houses (DU): 1999 – present

Science Fair Judge: (JHU) 1996; (Denver) 1998; (St. Francis School) 2009, 2010;

(Licking County Science Fair) 2011-2015; Ohio District 8 2015-present, State Science Day 2015-present

"Physics and the Space Program" (St. Edwards): 2008

Multiple national and local radio / newspaper interviews

Physics Magic Shows: 1992-present

Professional Service

Funding Review Panelist

Panelist for the astronomy (AST) division of the NSF (2002, 2003, 2011, 2012, 2013x2, 2014).

Panelist for the astronomy (AST) division of NSF GRFP (2018, 2019)

Proposal review panelist for the astrophysics theory (ATP) program of NASA

Member (2002,2003,2008,2009)

Panel Chair (2008)

Referee on a grant proposals for

The Research Corporation (2001),

VENI program (Dutch NWO; 2004),

US Civilian Research and Development Foundation (2006),

Georgian National Science Foundation (Republic of Georgia; 2007, 2015)

Referee

Astrophysical Journal (13)

Astronomy & Astrophysics (13)

Monthly Notices of the Royal Astronomical Society (2)

The Astronomical Journal (1)

Astrophysics and Space Science (1)

American Journal of Physics (1)

Graduate Thesis Committee Member

Graduate thesis committee member including 2002 (Boonman), 2003 (van Zadelhoff), 2006

(Jonkheid), 2009 (Visser)

Conference Panelist

Invited panelist for the Education Forum on Planetaria at the 195th AASociety Meeting, 1/2000.

Session Chair

Modeling Workshop for Spitzer satellite mission (2004)

International Workshop on Radiative Transfer in Astrophysical Molecules (1999)
 APS March meeting (1997)
 Conference Summaries
 International Workshop on Radiative Transfer in Astrophysical Molecules (1999)
 Reviewer
 Voyages Through the Universe 2nd Ed textbook (2001)
 Writer
 GRE Exam questions, Physics Exam (2001)
 Founding Member
 Midwest Astrochemistry Consortium (2007)

TEACHING (*directed/independent studies omitted*)

Course Responsibility

*Life, Death, & Aliens**# - *PHYS 245*: 2014, 2018 Evaluation: 4.8/5.0
 – Exploration of life, its possibilities and limitations from a fundamental physical point of view.

*Uncertain Science / Uncertain World**# - *FYS 102*: 2007 Evaluation: 4.5/5.0
 – Exploration of epistemology, science, and uncertainty as applied to decision making re: global warming.

Applied Math for Physical Systems# - *PHYS 201/245*: '07-'13, '17, '18 Avg. Evaluation: 4.6/5.0
 – An exploration of the unifying nature of mathematics as a language for physical systems

From the Sands to the Stars# - *FYS 102*: 2003 Evaluation: 4.0/5.0
 – An introduction to the questions and methods of doing science for first-year non-majors.

*Quarks to Cosmos**# - *PHYS 125*: 2004, 2003, 2002 Avg. Evaluation: 4.8/5.0
 – An introduction to the questions and methods of doing physics for first-semester majors. Concentrated on the role, value, and interpretation of experimental data. Various topics centered around the origin, and evolution of the universe.

Principles of Physics III [major] – *PHYS 127*: 2002, 2006, 2018 Avg. Evaluation: 4.8/5.0
 – Introductory, calculus-based physics for majors only. (Serway & Beichner).

General Physics I – *PHYS 121*: 2001, 2000, 2011, 2013, 2015 Avg. Evaluation: 4.6/5.0
 – Introductory, calculus-based, physics for non-majors. (Serway & Beichner).

*Stellar Origins and Evolution**# - *ASTR 312/345*: 2001, '08, '10, '17 Avg. Evaluation: 4.8/5.0
 – A junior-level introduction to stellar evolution toward and away from the main-sequence. Emphasis on physics applied to stellar and interstellar processes. (Goldberg & Scadron).

Principles of Physics II [major] – *PHYS 126*: 2001, 2007-2012 Avg. Evaluation: 4.8/5.0
 – Introductory, calculus-based physics for majors only. (Serway & Beichner).

*Introduction to Modern Physics** - *PHYS 200*: 2018, 2001, 1999 Avg. Evaluation: 4.5/5.0
 – A sophomore-level introduction to modern physics, including relativity, modern physics, introductory quantum physics, and statistical mechanics. (Krane)

*Classical Mechanics**- *PHYS 305*: 2006, 2000 Avg. Evaluation: 4.8/5.0
 – A detailed study of the motion of objects, including drag, oscillations, driving forces, central forces, variational principles, Lagrangians and Hamiltonians (Marion & Thornton).

Advanced Electricity and Magnetism- *PHYS 306*: '00, '03-'05, '08, '13-'17 Avg. Eval: 4.6/5.0
 – Basics of differential E&M, including waves and radiation. (Griffiths).

*Advanced Undergraduate Seminar** - *PHYS 400*: '11, '10, '07, '05, '03, '00 Avg. Eval: 4.2/5.0
 – A junior-level, thematic seminar course, in the journal-club style.

General Physics II – *PHYS 122*: 2000, 2015 Evaluation: 3.8/5.0
 – Introductory, calculus-based, physics. (Halliday, Resnick, & Walker).

*Introductory Astronomy**- *ASTR 100*: '99, '03-'04, '14-'15, '17-'18 Avg. Evaluation: 4.7/5.0
 – An introductory course (including labs) for non-science students (Zeilik)

*Advanced Undergraduate Seminar**# (*MSCD*): 1999, 1998 Avg. Evaluation: 3.9/4.0
*Advanced Theoretical Astrophysics**# (*MSCD*): 1998 Evaluation: 3.7/4.0
*Atomic and Molecular Structure** (*MSCD*): 1998, 1997 Avg. Evaluation: 3.8/4.0

- A follow-on to Introductory QM, (H atom through molecules). (Brandsen & Joachin).
General Physics I & II (MSCD)*: 1999, 1998 Avg. Evaluation: 3.9/4.0
- Introductory, calculus-based, physics. (Doty & Doty, Halliday & Resnick).
College Physics I (MSCD)*: 1999 Evaluation: 3.8/4.0
- Introductory, algebra based physics. (Wilson & Buffa).
Introduction to Physics (MSCD)*: 1998, 1997 Avg. Evaluation: 3.9/4.0
- An introductory course for non-science students (Hewitt).
College Physics Lab (MSCD): 1997 Evaluation: 3.7/4.0
- Introductory Astronomy* (MSCD)*: 1999, 1998 Avg. Evaluation: 3.8/4.0
- Introductory Astronomy* (Goucher College)*: 1997 Evaluation: 3.7/4.0
- Physics I & II for Scientists and Engineers (JHU)*: 1996, 1995 Avg. Evaluation: 3.9/4.0
- Head TA/Junior Lecturer. Responsible for course administration, syllabus, exams, oversight of TAs and undergraduate assistants, course-wide review classes, and some lectures. Also responsible for a section.
Interactive Physics I (RPI)* : 1994 Written Evals (Avail.)
- Co-course supervisor with A. Meltzer. Responsible for syllabus, lectures, labs, exams, and course grades.
Undergraduate Astrophysics Seminar (RPI): 1994 Written Evals (Avail.)
- Co-course supervisor with D. Whittet. Responsible for topic and format for semester, meeting with each speaker, chairing each session, and course grades.
Physics I - X Section (RPI): 1988 Evaluation: 4.0/4.0
- Responsible for 1/2 course grade, 1/2 lecture time, recitation, and lab (w/ R. Harper).

Section Responsibility as Post-Doc

- Physics I & II for Biology Students (JHU)*: 1996, 1995 Evaluation: 3.9/4.0
- Some Head TA duties including review classes and input on exams. Responsible for a conference sections, interactive discussions, and 20% of course grade.
- Introduction to Frontier Physics (JHU)*: 1995 No Evaluations
- Assistant responsible for evaluating student seminar papers, and project discussions.

*Courses utilizing final and in-term projects

#Courses I have developed.

Advising student research: 1991-1993, 1995, 1997 - present

Advised undergraduate and graduate students in computational physics and astrophysics. Co-advisor on three PhD theses (Boonman, Visser, Bruderer), member on two other PhD thesis (van Zadelhof, Jonkheid, van Kempen), and advisor for multiple senior theses. Undergraduate students advised include:

<u>Student Name</u>	<u>Institution</u>	<u>Year(s)</u>	<u>Publications (External to Home Institution)</u>
Ali Yazdenfar	JHU	1996	Acknowledgement on paper
Kipp Jonson	MSCD	1997	1 local poster
Matt Craggs	MSCD	1997	1 Journal Article
Michael Jorgensen	MSCD	1997	1 Journal Article
Andrew Holt*	MSCD	1998	1 local poster
Tracy Sutherland	MSCD	1998	1 national and 1 local poster
Gabe Pettus	MSCD	1998	1 local poster
Dave Riebel*	DU	1999	1 national poster
Matt Palotti*	DU	2000, 2001	2 Journal Articles, 4 national posters, 1 local poster
Meredith Moore	DU	2001	2 national posters, 1 local poster
Emily Oby*	DU	2001	1 national and 1 local poster
Nick Hristov	DU	2002	
Rebecca Metzler*	DU	2002,2003	1 Journal Article, 1 national poster, 1 local poster
W. Wamathaga*	DU	2003	1 local poster
Sheila Everett*	DU	2004,2005	1 Journal Article, 3 national posters, 1 local poster
Will Fortin*	DU	2004,2005	1 national poster
Rick Jesseph*	DU	2005	

Sean Newell	DU	2005	1 Journal Article
Matt Perkett*	DU	2005,2006,2007	1 Journal Article in prep, 2 national posters
Aaron Jackson*	DU	2006	1 Journal Article, 2 national posters
Rebecca Tidman*	DU	2007,2008	1 Journal Article, 2 national posters
Matt Bishop*	DU	2007	1 national poster
Adam Lowe*	DU	2007	1 Journal Article in prep
Maureen Crotty*	DU	2008	
Richard Field*	DU	2008	1 Journal Article
Jeff Cochran*	DU	2008-2011	1 Journal Article,, 2 national posters
Russell Holden*	DU	2009	
Matt Lipner*	DU	2009	1 Journal Article in prep
Kris Oman#	DU	2010,2011	2 national posters
Amanda Bruce	DU	2010	1 national poster
Clay Crocker*	DU	2011	1 national poster
Ben Keller*	DU	2013	1 Journal Article in prep
Brant Bowers*	DU	2013-2015	1 Journal Article in prep, 1 national poster, 1 international poster
Nathan Meyers*	DU	2015	1 national poster
Noah Rodgers*	DU	2015, 2015	1 national poster
Robert Templehof^	DU	2017	
Ange Sommerer^	DU	2017, 2018	
Shuheng Zhao^	DU	2017, 2018	1 international poster
Tranh Nguyen^	DU	2018	

*attended graduate school after graduation; #applying to graduate school, ^not yet graduated

RESEARCH

Overview

Most of my research experience has been in computational physics, with specific applications to astrophysics. In particular, I have experience in:

- Self-consistent solution of the radiative transfer problem, including:
 - dust, with multiple grain sizes, composition, and scattering
 - non-equilibrium (NLTE) line formation, in both static and moving media, including temperature, density, & velocity gradients
 - transiently heated small grains
- Solution of the chemical evolution problem, including:
 - time-dependent & equilibrium chemistry in interstellar clouds
 - chemistry in expanding media, w/ vel., temp., & dens. gradients
 - material surface chemistry for both static and expanding media.
- Solution of the multi-fluid hydrodynamic problem, including
 - stationary solution of the hydrodynamics in CSEs with simple cooling
 - time-dependent solution of multi-fluid hydrodynamics involving sources and flows from acoustic waves through trans- and hyper-sonic (including shocks).

My other research experience is based in both experimental, and computational physics.

- Some experience with Ultra-High Vacuum (UHV) systems, including analysis of High-Resolution Low-Energy Electron Diffraction (HRLEED) measurements of material surfaces and initial considerations of a Scanning Tunneling Microscope (STM) system.
- Construction and testing of particle detectors, for use in medium-energy accelerator.
- Solution for the propagation/interaction of soliton light waves in optical fibers.
- Research in Physics Education, including order of magnitude estimation
- Biophysics, including mechanics and muscle activation in throwing

Funded Grants (PI or Co-I) only:

Principal Investigator

1. “Study of Circumstellar Envelopes”, Pittsburgh Supercomputing Center, computer time awarded, 1996
2. “Circumstellar Outflows: An Undergraduate Project in Galactic Material Reprocessing”, The Provost’s Incentive Grants Program, 1997, MSCD, \$2K.
3. “Multimedia and On-Line Instructional Enhancement in Physics”, The President’s Professional Development Program, 1998, MSCD, \$10K
4. “Gas Outflows as a Direct Determination of Mass Loss from Evolved Stars”, The Provost’s Incentive Grants Program, 1998, MSCD, \$2K
5. “A Study of the Structures of Star Forming Regions: A New 3-D Radiative Transfer Simulation and its Application to Astrophysical Sources”, 1999, The Research Corporation, \$44K.
6. “Star-Formation in Multi-dimensional Regions: The Study of the Transition Sources L1544 and L1527”, 2003, DURF, \$4K
7. “Chemistry as a Probe of the History of Star-Forming Regions”, 2004, DURF, \$4K
8. “Thermal Balance in Three-Dimensional Sources: The Next Step in Understanding Multi-Dimensional Star-Forming Regions”, 2004, The Research Corporation, \$54K
9. “Microphysics of Irregular Star-Forming Regions”, 2005, DURF, \$4.5K
10. “Toward Constraining the Interior Structure of Massive Star-Forming Regions: Science in Preparation for SOFIA”, 2008-2011, NASA, \$123K
11. “WILL: Water In Low-Mass Legacy project”, Herschel OT2 data analysis, NASA, 2013, \$51K
PI on the US data analysis portion, co-I with Lars Kristensen on observing proposal.
12. “Using RAPSODO to augment a study of overhand throwing”, Rapsodo Inc., 2018, \$5K (equipment)

Funded – Co-I

1. “Support for Collaborative Research in Star Formation and Radiative Transfer”, 2000, NWO, with E. van Dishoeck (PI), Dfl 10.5K

2. “Water as a Probe of the Structures and Evolution of Massive Star Forming Regions: Simulations and Science in Preparation for Herschel/HIFI”, 2005, NWO, with E. van Dishoeck (PI), Eur 5.5K
3. “Disentangling energetic feedback in low-mass protostars with CO 16-15”, 2013, NASA, with J. Green (PI), \$17K

Observing Proposals Awarded – Co-I

- 1-o. “The Structure and Chemistry of High-Mass Star Formation Regions”, TEXES observations on GEMINI, with John Lacy (PI) et al., 2006
- 2-o. “Chemical and Physical Structures of Massive Protostars”, TEXES observations on GEMINI, with Nick Indriolo (PI) et al., 2014

Student Proposals Funded

- “Analysis of Shape/Structure in Liquid Drops”, 1998, Und. Res Opp Prog., UCD, K. Johnson*, \$1K
- “Partial Support for Summer Research in Three-Dimensional Radiative Transfer in the Netherlands”, 2000, Battelle Summer Award, M. Pallotti*, \$1.5K
- “A Study of the Force Concept Inventory and Its Results at Denison”, 2000, Anderson Summer Scholars Program, H. Jackman* (with K. Coplin & D. Gibson)
- “The Role of Very Small Grains in Star-Forming Regions”, 2001, Hughes Summer Program, M. Moore*
- “Observations of Star-Forming Regions”, 2001, Anderson Summer Scholar Program, E. Oby*
- “Multidimensional Minimization and its Application to an Automated Analysis of Astrophysical Data”, 2002, Anderson Summer Scholar Program, N. Hristov* (with M. Kretchmar)
- “Studying the Radiation from Star-Forming Regions”, 2002, Hughes Summer Scholar Program, R. Metzler*
- “Star-Formation in 3-D Geometries”, 2003, Anderson Summer Scholar Program, R. Metzler*
- “Partial Support for Summer Research in the Netherlands”, 2003, Battelle, R. Metzler, \$1.5K*
- “Chemistry & Temperature in 3-D”, 2003, Anderson Summer Scholar Program, W. Wamathaga*
- “Clumping in Star-Forming Regions”, 2004, Anderson Summer Scholar Program, S. Everett*
- “Thermal Balance in 3-D Star-Forming Regions”, 2004, Anderson Summer Scholar Program, W. Fortin*
- “Clumping in Star-Forming Regions”, 2004, Battelle, S. Everett*, \$1.5K
- “Analysis of Clumping of Interstellar Dust”, 2005, Anderson Summer Scholar Program, S. Everett*
- “Modeling 3D Star-Forming Regions”, 2005, Hughes Summer Scholar Program, M. Perkett*
- “Automating the Fitting of Astrophysical Observations”, 2006, Anderson Summer Scholar Program, A. Jackson*
- “Modeling 3D Star-Forming Regions”, 2006, Anderson Summer Scholar Program, M. Perkett*
- “Grain Evolution in Star Forming Regions”, 2007, Bowen Endowment, R. Tidman*
- “Search for Evidence of Pressure Confinement”, 2007, Anderson Summer Scholar Program, M. Bishop*
- “Inferring the Structure of Massive Star-Forming Regions”, 2007, Anderson Summer Scholar Program, M. Perkett*
- “Radiation Streaming in Centrally-Heated 3-D Environments”, 2008, Anderson Summer Scholar Program, M. Crotty*
- “Modeling Outflow Cavities in Massive Star Forming Regions”, 2008, Anderson Summer Scholar Program, R. Field*
- “Mapping the Inner Structure of Massive Star-Forming Regions for the next generation of infrared astronomy”, 2008 Anderson Summer Scholar Program, D. McGinnis*
- “Modeling the Inner structures of Massive Star-Forming Regions”, 2009, Bowen Summer Scholar, J. Cochran*
- “Probing Massive Star-Forming Regions with Emission and Absorption”, 2009, Anderson Summer Scholar Program, R. Holden*
- “Outflow and Shocks in Massive Star-Forming Regions”, 2010, Bowen Summer Scholar, A. Bruce*
- “Chemical Evolution in Collapsing Pre-protostellar Regions”, 2010, NASA, K. Oman
- “Clues to the Inner Structures of Massive Star-Forming Regions”, 2010, Anderson Summer Scholar Program, J. Cochran*
- “Modeling the Chemical Evolution of Star-Forming Regions from Clouds of Protostars”, 2011, Battelle, K. Oman, \$1.5K

- “Shocked and Irradiated Outflow Walls in Massive Star-Forming Regions”, 2011, Battelle, C. Crocker, \$1.5K.
- “Shocked Outflow Walls in AFGL2591”, 2015, Anderson Summer Scholar Program, Noah Rogers*
- “The Hydrodynamics of Infalling Massive Circumstellar Envelopes”, 2016, Anderson Summer Scholar Program, Nathan Meyers*
- “Shocked & Irradiated Outflow Walls in AFGL2591”, 2016, Anderson Summer Scholar Program, Noah Rogers*
- “Grain Surface Chemistry in NGC 7538 IRS9”, 2016, Anderson Summer Scholar Program, Brant Bowers*
- “Chemistry in Circumstellar Envelopes”, 2017, Robert Templehof*
- “Gaps in Circumstellar Disks”, 2017, Anderson Summer Scholar Program, Ange Sommerer*
- “The Shoulder in Overhand Throwing”, 2017, Anderson Summer Scholar Program, Shuheng Zhou*
- “Chemical Evolution in Massive, Infalling, Circumstellar Envelopes”, 2018, Anderson Summer Scholar Program, Tran Anh Nguyen*
- “Inferring the Visibility of Gaps in Circumstellar Disks Due to Multiple Planets,” 2018, Anderson Summer Scholar Program, Ange Sommerer*
- “The Kinetic Chain in Overhand Throwing,” 2018, Anderson Summer Scholar Program, Shuheng Zhou*

Seminars/Colloquia/Public Talks:

Invited

- “*Extended Outflow Cavities and Shocks Toward Massive Star Forming Regions*”, Plenary Talk, WISH meeting, Leiden, The Netherlands, 01/2011
- “*Outflows and Herschel*”, Plenary Talk, WISH meeting, Leiden, The Netherlands, 11/2009
- “*Massive Star Formation: Models and Implications*”, Astrophysics Seminar, Ohio University, Athens, OH, 10/2009
- “*The Herschel/HIFI Impact on our Understanding of Massive Star Formation*”, Colloquium, Institute for Astronomy, ETH Zurich, Switzerland, 5/2009
- “*Absorption Line Studies Toward Massive Star-Forming Regions*”, Colloquium, Institute for Astronomy, ETH Zurich, Switzerland, 5/2008
- “*Star Birth: A Shocking Story that Your Intellectual Parents Never Told You*”, Colloquium, Kenyon College, Gambier, OH, 01/2007
- “*Modeling Massive Star Formation*”, NASA ISM Workshop, Caltech, Pasadena, CA, 10/2006
- “*Massive Star Formation: Models Lead to a Possible Evolutionary Picture?*”, Colloquium, Institute for Astronomy, ETH Zurich, Switzerland, 5/2006
- “*Why are the Ages of Hot Cores All the Same?*”, Colloquium, Groningen University, Netherlands, 4/2006
- “*Water Lines Toward Massive Star-Forming Regions*”, Herschel/HIFI Water Key Program Planning Workshop, Lorentz Center, Leiden, The Netherlands, 4/2006
- “*Modeling Massive Star Forming Regions*”, Astro Seminar, Leiden University, Netherlands, 3/2006
- “*Chemistry in High- and Low-Mass YSOs*”, International Astronomical Union Colloquium #231, Asilomar, CA, 9/2005
- “*Predictions for Water Lines Toward Massive Star-Forming Regions*”, Herschel/HIFI Water Key Program Planning Workshop, Berkely, CA, 9/2005
- “*Toward Comprehensive Models of Massive Star-Forming Regions*”, SELAC workshop: Understanding the Universe through IR and Submm Astrophysics, University of Kentucky, 5/2005
- “*Synthesizing a Picture of Star-Forming Regions*”, Rensselaer Polytechnic Institute, Colloquium, 3/2005
- “*Three-Dimensional Modeling of Star-Forming Regions: Models Help Prepare for ALMA*”, National Radio Astronomical Observatory Colloquium, Socorro, NM, 12/2004
- “*Chemical Modeling of Star-Forming Regions*”, Spitzer Workshop, Caltech, Pasadena, CA, 11/2004
- “*Dust Radiative Transport in 3D*”, Spitzer Modeling Workshop, Caltech, Pasadena, CA, 11/2004
- “*Gas-Dust Energetics*”, Spitzer Modeling Workshop, Caltech, Pasadena, CA, 11/2004
- “*Water Models Meet Observations: Testing Physical-Chemical Models for Massive Star-Forming Regions*”, Water Workshop in Preparation for Herschel, Lorentz Center, Netherlands, 3/17/2004
- “*Modeling Star-Forming Regions*”, Astrochem Seminar, Leiden Univ., Leiden, Netherlands, 6/17/2003

“*Self-Consistent Models of Massive Star-Forming Regions*”, Colloquium, BIMA, U. Md., 1/30/2003
 “*On the Road Toward a Picture of Stellar Birth*”, Colloquium, Miami University, Oxford, OH, 1/30/2002
 “*On the Road Toward a Picture of Stellar Birth*”, Colloquium, Oberlin College, Oberlin, OH, 12/6/2001
 “*Radiation Transfer, Chemistry, and Thermodynamics in Star Forming Regions*”,
 ISM Seminar, University of Texas at Austin, Austin, TX, 11/3/2000.
 “*Studying Realistic Astrophysical Sources: Peering Out of Flatland*”, Colloquium, University of
 Colorado Denver, Denver, CO, 12/10/99
 “*The Use of Approximate Lambda Iteration in Predicting Line Profiles*”, Invited Talk, The International
 Workshop on Radiative Transfer in Astrophysical Molecules, Leiden, The Netherlands, 1999
 “*A Study of Water in Star-Forming Regions*”, Colloquium, University of Denver, Denver, CO, 2/10/99
 “*Interesting Pedagogy in Introductory Electricity & Magnetism*”, Invited Talk (w/ R. Krantz), Denver
 Area Physics Teachers, Denver, CO, 12/1/98
 “*Water in Star-Forming Regions*”, Colloquium, Space Physics Research Lab, The University of
 Michigan, Ann Arbor, MI, 11/6/98.
 “*Physics in Forensic Science*”, Invited Talk, Denver Area Physics Teachers, Denver, CO, 10/6/98.
 “*Modeling Dense Cloud Cores*”, Astrophysics Seminar, Rensselaer, Troy, NY, 12/12/96
 “*Recent Advances in and Implications of Modeling Dense Cloud Cores*”, Astrophysics Seminar,
 University of North Carolina at Chapel Hill, Chapel Hill, NC, 10/25/96

Local / Public

“*Roundtable on Making Class Time Count*”, Teaching Matters, Granville, OH, 23 January, 2014
 “*My Experiences in Meeting Students Where They Are: Podcasting & Mock Trials*”, Teaching Matters,
 Granville, OH, 10/04/2006
 “*Star Birth: A Shocking Story That Your Intellectual Parents Never Told You*”, Denison Scientific
 Association, Granville, OH, 10/04/2006
 “*Very Small Grains or Very Large Molecules: Cadillacs in the Sky?*”, Denison Scientific Association,
 Granville, OH, 10/20/99
 “*Water Masers in Orion*”, Colloquium, Auraria, Denver, CO, 10/9/98
 “*The Role of Very Small Grains in Star Forming Regions?*”, Colloquium, Auraria, Denver, CO, 9/19/97
 “*Interstellar PAHs and VSGs*”, Ctr for Astr Sci, The Johns Hopkins University, Baltimore, MD, 4/16/96.

Community Outreach and Involvement

Other Outreach (related to professional status)

Multiple national and local radio / newspaper interviews for special events
 “*Stars: Their Birth, Life, and Death*”, Granville Christian Academy, 3/2014
 Physics at GES Science Night, 2012
 Physics Magic Show, The Works, 2009, 2010, 2011, 2012
 “*Tapping Trees and Making Syrup: Yummy Energy from the Sun*”, St. Francis de Sales School, 3/2009
 “*Mars: Past, Present, and Future*”, DOWS Departmental Event, 1/2009
 “*Rockets and Our Solar System*”, St. Edwards Pre-School, 4/2008
 “*The Leonids Meteor Shower*”, Boy Scout Troop, 2007
 “*The Night Sky*”, Wolf Farms, 2007
 “*Life in the Universe*”, Public Lecture, Chestnut Ridge Country Club, Baltimore, Maryland, 4/10/97
 “*Astronomers Past, Present, and Future*”, Utica Middle Schools, Utica, Michigan, 4/7/97.
 Served over 2000 people in public and private planetarium shows (over XXXX since 2011)
 Served over 1000 people in public and private observatory open houses

Other Community Involvement

Member, Knights of Columbus, Council 10941
 Lector & Eucharistic Minister, Church of the Resurrection, New Albany
 Coach, Granville Recreation Baseball (6-12 year olds), 2010-2015 (placed 4th in all-county)

championships, placed 3rd in Little League District Tournament)
Coach, 7th & 8th grade baseball, 2016-2017 (runner up in licking county league tournament both years)
Coach, Babe Ruth All-Star Team, 2016-2017. Won State Title (2016), and runner up (2017)
Coach, Granville Youth Football, 2013-2015
Assistant, Granville High School Football, 2015-present
Chair, Granville Recreation District Baseball Committee, 2012-2013
Member, Granville Recreation District Baseball Committee, 2011-2013
Hosted radio show on WDUB (campus radio), 2006-2008

Bibliography of Scientific Papers / Books

Steven D. Doty

Google Scholar h-index = 35, i10-index = 52

(60 refereed papers; 84 published conference papers/proceedings;

Including 8 refereed journal articles and 33 posters with undergraduate co-authors)

Journal Articles:

1. "A Critical Evaluation of Semi-Analytical Techniques in the Study of Unresolved, Centrally Heated, Infrared Sources", S. D. Doty & C. M. Leung, 1994, ApJ, 424, 729-747.
2. "Gas Temperature Distribution in the IRC +10216 Circumstellar Envelope", S. D. Doty & C. M. Leung, 1997, MNRAS, 286, 1003-1011.
3. "Models for Dense Molecular Cloud Cores", S. D. Doty & D. A. Neufeld, 1997, ApJ, 425, 122-142.
4. "The Dielectric Breakdown of Air as an Example of Order of Magnitude Physics", S. D. Doty & S. L. Doty, 1998, The Physics Teacher, 36, 10, 6-9.
5. "Maximally Even Sets and the Devil's-Staircase Phase Diagram for the One-Dimensional Ising Antiferromagnet with Arbitrary-Range Interaction", R. Krantz, J. Douthett, & S. D. Doty, 1998, JMP, 39, 9, 4675-4682.
6. "Detailed Chemical Modeling of the Circumstellar Envelopes of Carbon Stars: Application to IRC +10216", S. D. Doty & C. M. Leung., 1998, ApJ, 502, 898-908.
7. "The 'Lightning Machine': A Simple Demonstration of Dielectric Breakdown", S. D. Doty, M. Craggs*, M. Jorgenson*, S. L. Doty, & D. Hodd, 2000, AjP, 68, 579-581.
8. "Application of a Self-Consistent Thermal Balance and Radiative Transfer Model to Study the Observed 183GHz Masing Emission from Water in Orion", S. D. Doty, 2000, ApJ, 535, 907-912
9. "Chemistry as a probe of the structures and evolution of massive star-forming regions", S. D. Doty, F. S. van der Tak, E. F. van Dishoeck, & A. M. S. Boonman, 2002, A&A, 389, 446-463
10. "A Study of Some Current Methods of Analysing Observations of Star-Forming Regions", S. D. Doty & M. L. Palotti*, 2002, MNRAS, 335, 993
11. "Numerical Methods for non-LTE line radiative transfer: Performance and convergence characteristics", G. J. van Zadelhof, C. P. Dullemond, J. A. Yates, F. F. S. van der Tak, S. D. Doty, V. Ossenkopf, M. R. Hogerheijde, M. Juvela, H. Wiesemeyer, & F. L. Schoier, 2002, A&A, 395, 373.
12. "Gas-Phase CO₂, C₂H₂, and HCN Toward Orion-KL", A. M. S. Boonman, E. F. van Dishoeck, F. Lahuis, S. D. Doty, C. M. Wright, & D. Rosenthal, 2003, A&A, 399, 1047
*Indicates the individual is/was an undergraduate at MSCD / UCD / DU
13. "Gas-Phase CO₂ Toward Massive Protostars", A. M. S. Boonman, E. F. van Dishoeck, F. Lahuis, & S. D. Doty, 2003, A&A, 399 1063
14. "Gas-Phase H₂O Between 5um and 540um Toward Massive Protostars", A. M. S. Boonman, S. D. Doty, E. F. van Dishoeck, E. A. Bergin, G. J. Melnick, C. M. Wright, and R. Stark, 2003, A&A, 406, 937.
15. "Physical-Chemical Modeling of the Low-Mass Protostar IRAS 16293-2422", S. D. Doty, F. L.

- Schoier, & E. F. van Dishoeck, 2004, A&A, 418, 1021
16. “*Influence of UV Radiation from a Massive YSO on the Chemistry of its Envelope*”, P. Staeuber, S. D. Doty, E. F. van Dishoeck, J. K. Jorgensen, & A. O. Benz, 2004, A&A, 425, 577
 17. “*Probing Pre-Protostellar Cores with Formaldehyde*”, K. E. Young, J. E. Lee, N. J. Evans II., P. F. Goldsmith, & S. D. Doty, 2004, ApJ, 614, 252
 18. “*Constraining the Structure of the L1544 Star-Forming Region*”, S. D. Doty, S. E. Everett*, N. J. Evans II., Y. L. Shirley, & M. L. Palotti*, 2005, MNRAS, 362, 737
 19. “*Effects of clumping on temperature - I. Externally heated clouds*”, S. D. Doty, R. A. Metzler*, & M. L. Palotti*, 2005, MNRAS, 362, 737
 20. “*X-ray chemistry in the envelopes around young stellar objects*”, P. Staeuber, S. D. Doty, E. F. van Dishoeck, & A. O. Benz, 2005, A&A, 440, 949
 21. “*Thermal effects on bovine-tendon elasticity: implications for provocative elongation techniques*”, E. Winters, S. D. Doty, & S. Newell*, 2006, Journal of Sport Rehabilitation, 15, TBD
 22. “*The effect of a strong external radiation field on protostellar envelopes*”, J. K. Jorgensen, D. Johnstone, E. F. van Dishoeck, & S. D. Doty, 2006, A&A, 449, 609
 23. “*Water destruction by x-rays in young stellar objects*”, P. Staeuber, J. K. Jorgensen, E. F. van Dishoeck, S. D. Doty, & A. O. Benz, 2006, A&A, 453, 555
 24. “*Astrochemical confirmation of the rapid evolution of massive YSOs and explanation for the inferred ages of hot cores*”, S. D. Doty, E. F. van Dishoeck, J. C. Tan, 2006, A&A Letters, 454, L5
 25. “*Infrared Molecular Starburst Fingerprints in Deeply Obscured (Ultra)Luminous Infrared Galaxy Nuclei*”, F. Lahuis, H. Spoon, S. D. Doty, L. Armus, J. Houck, A. Tielens, E. van Dishoeck, & P. Staeuber, 2007, ApJ, 659, 296
 26. “*Tracing High Energy Radiation with Molecular Lines in Star Forming Regions*”, P. Staeuber, A. O. Benz, J. K. Jorgensen, E. F. van Dishoeck, & S. D. Doty, 2007, A&A, 466, 977
 27. “*Modeling water emission from low-mass protostellar envelopes*”, T. van Kempen, S. D. Doty, E. F. Van Dishoeck, & J. Jorgensen, 2008, A&A, 487, 975.
 28. “*The chemical history of molecules in circumstellar disks, I. Ices*”, R. Visser, E. F. van Dishoeck, S. D. Doty, & C. P. Dullemond, 2009, A&A, 495, 881.
 29. “*A Parameter Study of the Dust and Gas Temperature in a Field of Young Stars*”, A. Urban, N. J. Evans II., & S. D. Doty, 2009, ApJ, 698, 1341
 30. “*Chemical modeling for young stellar objects, I. Methods and benchmarks*”, S. Bruderer, S. D. Doty, & A. O. Benz, 2009, ApJS, 183, 179
 31. “*Multidimensional chemical modeling of young stellar objects, II. Irradiated outflow walls in a high mass star forming region*”, S. Bruderer, A. O. Benz, S. D. Doty, E. F. van Dishoeck, & T. L. Bourke, 2009, ApJ, 700, 872
 32. “*Evidence for warm and dense material along the outflow of a high-mass YSOs*”, S. Bruderer, A. O. Benz, T. L. Bourke, & S. D. Doty, 2009, A&AL, 503, 13

33. “*Origin of the hot gas in low-mass protostars: Herschel-PACS spectroscopy of HH 46*”, van Kempen, T. A.; Kristensen, L. E.; Herczeg, G. J.; Visser, R.; van Dishoeck, E. F.; Wampfler, S. F.; Bruderer, S.; Benz, A. O.; Doty, S. D.; Brinch, C.; and 55 coauthors, 2010, A&AL, 518, 121.
34. “*Water abundance variations around high-mass protostars: HIFI observations of the DR21 region*”, van der Tak, F. F. S.; Marseille, M. G.; Herpin, F.; Wyrowski, F.; Baudry, A.; Bontemps, S.; Braine, J.; Doty, S.; Frieswijk, W.; Melnick, G.; and 49 coauthors, 2010, A&AL, 518, 107.
35. “*Hydrides in Young Stellar Objects: Radiation tracers in a protostar-disk-outflow system*”, A.O. Benz, S. Bruderer, E.F. van Dishoeck, P. Stäuber, S.F. Wampfler, M. Melchior, C. Dedes, F. Wyrowski, S.D. Doty, F. van der Tak, W. Bachtold, A. Csillaghy, A. Megej, C. Monstein, M. Soldati; and 54 coauthors, 2010, A&AL, 521, 35
36. “*Herschel-HIFI detections of hydrides towards AFGL 2591: envelope emission vs. tenuous cloud absorption*”, S. Bruderer, A. O. Benz, E. F. van Dishoeck, M. Melchior, S. D. Doty, F. F. S. van der Tak, P. Staueber, S. F. Wampfler, C. Dedes, U. A. Yildiz, and 59 coauthors, 2010, A&AL, 521, 44.
37. “*Herschel observations of the hydroxyl radical (OH) in young stellar objects*”, Wampfler, S. F.; Herczeg, G. J.; Bruderer, S.; Benz, A. O.; van Dishoeck, E. F.; Kristensen, L. E.; Visser, R.; Doty, S. D.; Melchior, M.; van Kempen, T. A.; and 52 coauthors, 2010, A&AL, 521, 36.
38. “*Water in low-mass star-forming regions with Herschel: HIFI spectroscopy of NGC1333*”, L.E. Kristensen, R. Visser, E.F. van Dishoeck, U.A. Yıldız, S.D. Doty, G.J. Herczeg, F.-C. Liu, B. Parise, J.K. Jørgensen, T.A. van Kempen, C. Brinch, S.F. Wampfler, S. Bruderer, A.O. Benz, M.R. Hogerheijde, E. Deul; and 51 coauthors, 2010, A&AL, 521, 30.
39. “*Herschel/HIFI observations of high-J CO lines in the NGC 1333 low-mass star-forming region*”, U. A. Yildiz, E. F. van Dishoeck, L. E. Kristensen, R. Visser, J. K. Jørgensen, G. J. Herczeg, T. A. van Kempen, M. R. Hogerheijde, S. D. Doty, A. O. Benz, & 53 co-authors, 2010, A&AL, 521, 40.
40. “*Water cooling of shocks in protostellar outflows: Herschel-PACS map of L1157*”, Nisini, B.; Benedettini, M.; Codella, C.; Giannini, T.; Liseau, R.; Neufeld, D.; Tafalla, M.; van Dishoeck, E. F.; Bachiller, R.; Baudry, A.; and 55 coauthors, 2010, A&AL, 518, 120.
41. “*Herschel-HIFI spectroscopy of the intermediate mass protostar NGC7129 FIRS 2*”, Fich, M.; Johnstone, D.; van Kempen, T. A.; McCoey, C.; Fuente, A.; Caselli, P.; Kristensen, L. E.; Plume, R.; Cernicharo, J.; Herczeg, G. J.; and 51 coauthors, 2010, A&AL, 521, 41.
42. “*Water in massive star-forming regions: HIFI observations of W3 IRS5*”, Chavarría, L.; Herpin, F.; Jacq, T.; Braine, J.; Bontemps, S.; Baudry, A.; Marseille, M.; van der Tak, F.; Pietropaoli, B.; Wyrowski, F.; and 52 coauthors, 2010, A&AL, 521, 37.
43. “*Variations in H_2O^+/H_2O ratios toward massive star-forming regions*”, Wyrowski, F.; van der Tak, F.; Herpin, F.; Baudry, A.; Bontemps, S.; Chavarría, L.; Frieswijk, W.; Jacq, T.; Marseille, M.; Shipman, R.; and 56 coauthors, 2010, A&AL, 521, 34.
44. “*Sensitive limits on the abundance of cold water vapor in the DM Tauri protoplanetary disk*”, Bergin, E. A.; Hogerheijde, M. R.; Brinch, C.; Fogel, J.; Yıldız, U. A.; Kristensen, L. E.; van Dishoeck, E. F.; Bell, T. A.; Blake, G. A.; Cernicharo, J.; and 54 coauthors, 2010, A&AL, 521, 33.
45. “*Water abundances in high-mass protostellar envelopes: Herschel observations with HIFI*”, Marseille, M. G.; van der Tak, F. F. S.; Herpin, F.; Wyrowski, F.; Chavarría, L.; Pietropaoli, B.; Baudry, A.; Bontemps, S.; Cernicharo, J.; Jacq, T.; and 61 coauthors, 2010, A&AL, 521, 32.

46. “*Water vapor toward starless cores: The Herschel view*”, Caselli, P.; Keto, E.; Pagani, L.; Aikawa, Y.; Yıldız, U. A.; van der Tak, F. F. S.; Tafalla, M.; Bergin, E. A.; Nisini, B.; Codella, C.; and 56 coauthors, 2010, *A&AL*, 521, 29.
47. “*Automated fitting of B335 dust continuum observations: approach and evidence for grain evolution*”, S. D. Doty, [R. Tidman](#), Y. Shirley, & [A. Jackson](#), 2010, *MNRAS*, 406, 1190.
48. “*Multidimensional Chemical Modeling of Young Stellar Objects. III. The Influence of Geometry on the Abundance and Excitation of Diatomic Hydrides*”, Bruderer, S.; Benz, A. O.; Stäuber, P.; Doty, S. D., 2010, *ApJ*, 720, 1432.
49. “*Water in star-forming regions with the Herschel Space Observatory (WISH): I. Overview of key programs and first results*”, E. F. van Dishoeck, L. E. Kristensen, A. O. Benz, E. A. Bergin, P. Caselli, J. Cernicharo, F. Herpin, M. R. Hogerheidje, D. Johnstone, R. Liseau, B. Nisini, R. Shipman, M. Tafalla, F. van der Tak, F. Wyrowski, Y. Aikawa, R. Bachiller, A. Baudry, M. Benedettini, P. Bjerkeli, G. Blake, S. Bontemps, J. Braine, C. Brinch, S. Bruderer, L. Chavarria, C. Codella, F. Daniel, Th. De Graauw, E. Deul, A. di Giorgio, C. Dominik, S. D. Doty, M. L. Dubernet, P. Encranz, H. Feuchtgruber, M. Fich, W. Frieswijk, A. Feunte, T. Giannai, J. Goicoechea, F. Helmich, G. Herczeg, T. Jacq, J. Jorgensen, A. Karska, M. Kaufman, E. Keto, B. Larsson, B. Lefloch, D. Lis, M. Marseille, C. McCoe, G. Melnick, D. Neufeld, M. Olberg, L. Pagani, O. Panic, B. Parise, J. C. Pearson, R. Plume, C. Risacher, D. Salter, J. Santiago-garcia, P. Saraceno, P. Stauber, T. van Kempen, R. Visser, S. Viti, M. Walmsley, S. Wampfler, U. Yıldız, 2011, *PASP*, 123, 900, 138
50. “*First hyperfine resolved far-infrared OH spectrum from a star-forming region*”, S. Wampfler, S. Bruderer, L. Kristensen, L. Chavarria, E. A. Bergin, A. O. Benz, E. F. van Dishoeck, G. J. Herczeg, F. F. S. van der Tak, J. R. Goicoechea, S. D. Doty, & E. Herpin, 2011, *A&A*, 531L, 16
51. “*The chemical history of molecules in circumstellar disks. II. Gas-phase species*”, R. Visser, S. D. Doty, & E. F. van Dishoeck, 2011, *A&A*, 534, 132
52. “*Modelling Herschel observations of hot molecular gas emission from embedded low-mass protostars*”, R. Visser, L. E. Kristensen, S. Bruderer, E. F. van Dishoeck, G. J. Herczeg, C. Brinch, S. D. Doty, D. Harsono, & M. G. Wolfire, 2012, *A&A*, 537, 55
53. “*The warm gas atmosphere of the HD 100546 disk seen by Herschel. Evidence of a gas-rich, carbon-poor atmosphere?*”, S. Bruderer, E. F. van Dishoeck, S. D. Doty, & G. J. Herczeg. 2012, *A&A*, 541, 91
54. “*Water in star-forming regions with Herschel (WISH). II. Evolution of the 557 GHz 110-101 emission in low-mass protostars*”, L. E. Kristensen, E. F. van Dishoeck, E. A. Bergin, R. Visser, U. A. Yıldız, I. Son Jose-Garcia, J. K. Jorgensen, G. J. Herczeg, D. Johnstone, S. F. Wampfler, Benz, A. O.; Bruderer, S.; Cabrit, S.; Caselli, P.; Doty, S. D.; Harsono, D.; Herpin, F.; Hogerheijde, M. R.; Karska, A.; van Kempen, T. A.; Liseau, R.; Nisini, B.; Tafalla, M.; van der Tak, F.; Wyrowski, F., 2012, *A&A*, 542, 8
55. “*OH far-infrared emission from low-and intermediate-mass protostars surveyed with Herschel-PAC*”, S. F. Wampfler, S. Bruderer, A. Karska, G. J. Herczeg, E. F. van Dishoeck, L. E. Kristensen, J. R. Goicoechea, A. Benz, S. D. Doty, C. McCoe, et al., 2013, *A&A*, 552, 56
56. “*Water in star-forming regions with Herschel (WISH), III. Far-infrared cooling lines in low-mass young stellar objects*”, Karska, A.; Herczeg, G. J.; van Dishoeck, E. F.; Wampfler, S. F.; Kristensen, L. E.; Goicoechea, J. R.; Visser, R.; Nisini, B.; San José-García, I.; Bruderer, S.; Śniady, P.; Doty, S.; Fedele, D.; Yıldız, U. A.; Benz, A. O.; Bergin, E.; Caselli, P.; Herpin, F.; Hogerheijde, M. R.; Johnstone, D.; Jørgensen, J. K.; Liseau, R.; Tafalla, M.; van der Tak, F.; Wyrowski, F., 2013, *A&A*, 552,

57. “Warm C₂H₂ toward NGC 7538 IRS9: Grain surface origin”, Doty, S. D., Doty, S. L., Cochran, J., Lacy, J., Barentine, J. Field, R., 2014, IJAA, 4, 479

58. “Inferring the structure of the pre-protostellar core L1498”, Doty, S. D., Doty, S. D., Perkett, M. J., 2014, IJAA, 4, 519

59. “Origin of warm and hot gas emission from low-mass protostars: Herschel-HIFI observations of CO J=16-15. I. Line profiles, physical conditions, and H₂O abundance.”, Kristensen, L. E., van Dishoeck, E.F., Mottram, J. C., Karska, A., Yildiz, U. A., Bergin, E. A., Bjerkeli, P., Cabrit, S., Doty, S. D., Evans, N. J. II, Gusdorf, A., Harsono, D., Herczeg, G. J., Johnstone, D., Jorgensen, J. K., van Kempen, T. A., Lee, J. -E., Maret, S., Tafalla, M., Visser, R., & Wampfler, S. F., 2017, A&A, 605, 93

60. “A study of overhand throwing using simultaneous high-speed kinematic videography and surface electromyography”, Doty, S. D., Winters, E. R., Lott, M., Doty, S. L., Munoz, S.*, Staniszewski, N.*, Zhao, S.*, IEEE Explore, 2018 (forthcoming) [accepted and presented at IEEE EMBC 2018]

In Preparation:

61. “The structure of the WIT in NGC 7538 IRS9, and the origin of acetylene”, S. D. Doty, J. Lacy, B. Bowers*. In preparation for submission to ApJ.

62. “Sulphur in infalling massive protostellar envelopes”, S. D. Doty, S. L. Doty, B. Keller*, and M. Lippner*. In preparation for submission to ApJ.

63. “The effects of grain surface chemistry in evolving high-mass star-forming regions”, S. L. Doty, S. D. Doty, R. Visser, E. F. van Dishoeck, K. Oman*. In preparation for submission to MNRAS.

64. “A Simple Model for De-fibrillation”, S. L. Doty, S. D. Doty, C. Mosier*, & E. Winters. In preparation for submission to the Physics Teacher.

65. “Interpreting CO emission from the high-mass star-forming region AFGL 2591”, S. D. Doty, M. van der Weil, F. F. S. van der Tak, E. F. van Dishoeck. In preparation for submission to A&A.

66. “Effects of Clumping on Temperature II. Internally Heated Sources”, S. D. Doty, R. Metzler*, & M. Palotti*. In preparation for submission to the MNRAS.

67. “A Simple and Interestesting Student Speed of Light Experiment”, S. D. Doty & J. McClure*. In preparation for submission to AjP.

68. “A Simple Student Project in Stereoscopic Vision”, S. D. Doty & S. L. Doty. In preparation for submission to the Physics Teacher.

*Indicates the individual is/was an undergraduate at MSCD / UCD / DU

Proceedings:

84a. “*The predictive power of first exams in introductory physics and astronomy courses*,” S. L. Doty, S. D. Doty. Contributed to AAPT, Cincinnati, OH, July, 2017

83a. “*The Sulphur Reservoir in High Mass Star Forming Regions*”, S. L. Doty, N. Meyers*, S. D. Doty. Contributed to IAU, Honolulu, HI, August, 2015

82a. “*Outflows in Massive Star Forming Regions: UV Radiation and Shocked Cavity Walls Toward AFGL 2591*”, S. D. Doty, N Rogers*, S. L. Doty, F. F. S. van der Tak, & E. van Dishoeck. Contributed to IAU, Honolulu, HI, August, 2015

81a. “*The Structure of NGC 7538IRs9: A Massive Star Forming Region with Spatially Constrained Warm Gas*”, S. D. Doty & B. Bowers*. Contributed to IAU, Honolulu, HI, August, 2015.

80a. “*Chemical Evolution of Dust and Gas in an Infalling, Evolving, Massive Protostellar Envelope*”, S. D. Doty, S. L. Doty, & N. Myers*. Contributed to IAU, Honolulu, HI, August, 2015.

79a. “*The Role of Irradiated and Shocked Cavity Walls on Observations of Protostellar Regions*”, S. D. Doty, S. Bruderer, L. Kristensen, R. Visser, E. van Dishoeck, & C. Crocker. Contributed to the 220th Meeting of the American Astronomical Society, Anchorage, AK, June, 2012.

78a. “*The Effects of Grain Surface Chemistry In Evolving High-mass Star Forming Regions*”, S. L. Doty, S. D. Doty, R. Visser, & E. F. van Dishoeck. Contributed to the 220th Meeting of the American Astronomical Society, Anchorage, AK, June, 2012.

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- 71a “*Chemical Evolution of Collapsing Clouds in Massive Star Formation*”, K. Oman*, S. D. Doty, & M. Krumholz. Contributed to the 217th Meeting of the American Astronomical Society, Seattle, WA, January, 2011.
- 70a “*Modeling Disks Around Massive Protostars*”, J. Cochran*, S. D. Doty, & J. Lacy. Contributed to the 217th Meeting of the American Astronomical Society, Seattle, WA, January, 2011.
- 69a “*Unbiased Fitting of Dust Continuum Observations*”, S. D. Doty, R. Tidman*, Y. Shirley, & A. Jackson*. Contributed to the 215th Meeting of the American Astronomical Society, Washington, DC, January, 2010.
- 68a “*Interpretation of Molecular Absorption Lines Toward NGC 7538 IRS9*”, J. Cochran*, S. D. Doty, J. Barnetine, & J. Lacy. Contributed to the 215th Meeting of the American Astronomical Society, Washington, DC, January 2010.
- 67a “*Grain Evolution and Structure in B335*”, R. Tidman*, & S. D. Doty. Contributed to the 213th Meeting of the American Astronomical Society, Long Beach, CA, January, 2009.
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- 63a “*A Inferring the Structure of L1498*”, M. Perkett* & S. D. Doty. Contributed to the 211th Meeting of the American Astronomical Society, Austin, TX, January, 2008.
- 62a “*Star Formation in a Filament? L1689B*”, M. Bishop* & S. D. Doty. Contributed to the 211th Meeting of the American Astronomical Society, Austin, TX, January, 2008.
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- 57a. “*Inferring the structure and local conditions of starless cores: 3D models meet observations*”, S. D. Doty, S. E. Everett*, M. Perkett*, Y. L. Shirley, N. J. Evans II, & M. L. Palotti*. Contributed to Protostars and Planets V, Waikaloa, HI, 2005
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- 50a. *“3D Continuum Radiative Transfer Modeling of L1544”*, S. E. Everett*, S. D. Doty, Y. L. Shirley, N. J. Evans II, & M. L. Palotti*. Contributed to the 205th Meeting of the American Astronomical Society, San Diego, CA, 2005
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- 48a. *“X-ray Chemistry in the Envelopes Around Young Stellar Objects”*, P. Staeuber, E. F. van Dishoeck, S. D. Doty, J. K. Jorgensen, & A. O. Benz. Contributed to The Dusty and Molecular Universe: A Prelude to Herschel and ALMA, Paris, France, 2004
- 47a. *“Probing Pre-Protostellar Cores with Formaldehyde”*, K. E. Young, J. –E. Lee, N. J. Evans II, P. F. Goldsmith, & S. D. Doty. Contributed to the 204th Meeting of the American Astronomical Society, Denver, CO, 2004
- 46a. *“Clumping in Star-Forming Regions”*, R. Metzler* & S. D. Doty. Contributed to Fall Ohio Section of the American Physical Society, Cleveland, OH, October, 2003
- 45a. *“3D Modeling of a Real Star Forming Region: L1544”*, S. E. Everett* & S. D. Doty. Contributed to Fall Ohio Section of the American Physical Society, Cleveland, OH, October, 2003
- 44a. *“Gas Phase Chemistry of Low Mass Star Forming Regions”*, W. Wamathaga* & S. D. Doty. Contributed to Fall Ohio Section of the American Physical Society, Cleveland, OH, October, 2003
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- 42a. *“Inferring Cloud Structure by Modeling Continuum Dust Emission”*, S.D. Doty, M. Palotti*, M. Moore*, Y. Shirley, C. Young, & N. J. Evans. Contributed to the Star Formation Chemistry 2002 meeting in Waterloo, ON, Canada, August, 2002

- 41a. *“Water Lines: A Test of the Physical-Chemical Structure of Massive Star-Forming Regions”*, S. D. Doty, A. M. S. Boonman, E. F. van Dishoeck, E. A. Bergin, G. J. Melnick, & C. M. Wright. Contributed to the Star Formation Chemistry 2002 meeting in Waterloo, ON, Canada, August 2002
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- 39a. *“Thermal Balance and Molecular Lines Toward AFGL 2591”*, S. D. Doty, A. M. S. Boonman, E. F. van Dishoeck, & F. F. S. van der Tak. Contributed to the 199th Meeting of the American Astronomical Society, Washington, DC, 2002
- 38a. *“On the Importance of Source Geometry for Continuum Radiation”*, M. Palotti* & S. D. Doty. Contributed to the 199th Meeting of the American Astronomical Society, Washington, DC, 2002
- 37a. *“Subthermal CO Excitation in Circumstellar Envelopes”*, E. Oby* & S. D. Doty. Contributed to the 199th Meeting of the American Astronomical Society, Washington, DC, 2002
- 36a. *“On the Importance of Small Grains in the Study of Star-Forming Regions”*, M. Moore* & S. D. Doty. Contributed to the 199th Meeting of the American Astronomical Society, Washington, DC, 2002
- 35a. *“Extinction Toward the Cloud L977”*, E. Oby* & S. D. Doty. Contributed to Fall Ohio Section of the American Physical Society, Columbus, OH, 2001
- 34a. *“The Role of Source Structure on Temperature”*, M. Palotti* & S. D. Doty. Contributed to Fall Ohio Section of the American Physical Society, Columbus, OH, 2001
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- 31a. *“Application of a Detailed Chemical and Physical Models to GL2591”*, S. D. Doty. Contributed to the 197th Meeting of the American Astronomical Society, San Diego, CA, 2001.
- 30a. *“A Proposed Mechanism for the Destruction of Carbon Dioxide in Star-Forming Regions”*, S. D. Doty, E. F. van Dishoeck, T. J. Millar, F. S. van der Tak, A. M. S. Boonman. Contributed to the Euro Meeting on Molecular Dynamics with Relevance to Interstellar Processes, Israel, 2000.
- 29a. *“Modeling Thermal Balance in Three-Dimensional Sources”*, S. D. Doty. Contributed to the 195th Meeting of the American Astronomical Society, Atlanta, GA, 2000.
- 28a. *“A Study of the Likelihood of Single Star Formation in Bok Globules”*, D. S. Riebel*, T. L. Huard, S. D. Doty, S. J. Yorke, D. A. Weintraub. Contributed to the 195th Meeting of the American Astronomical Society, Atlanta, GA, 2000.
- 27a. *“The Use of Approximate Lambda Iteration in Predicting Line Profiles”*, S. D. Doty. An Invited talk given to the International Workshop on Radiative Transfer in Astrophysical Molecules, Leiden, The Netherlands, 1999.

- 26a. “*Gas-Phase Water and Carbon Dioxide Toward Massive Protostars*”, A. Boonman, E. F. van Dishoeck, F. Lahuis, C. M. Wright, S. D. Doty. Contributed to the IAU Symposium on Cosmic Chemistry, Seoul, South Korea, 1999.
- 25a. “*A Comparative Study of Various Radiative Transfer Simulation*”, G. J. van Zadelhoff, S. D. Doty, K. Dullemond, M. Hogerheidje, V. Ossenkopf, F. van der Tak, J. Yates. Contributed to the IAU Symposium on Cosmic Chemistry, Seoul, South Korea, 1999.
- 24a. “*On the Utility of a Mid-Infrared Excess in Identifying Sites of Star Formation*”, G. Pettus*, & S. D. Doty. Contributed to the Colorado/Wyoming Section of the AAPT, Denver, CO, 1999.
- 23a. “*Is it Possible for Gas to Exist Below 2.72K?*”, A. Holt*, & S. D. Doty. Contributed to the Colorado/Wyoming Section of the AAPT, Denver, CO, 1999.
- 22a. “*The Size and Shape of Raindrops*”, K. Jonson*, & S. D. Doty. Contributed to the Colorado/Wyoming Section of the AAPT, Denver, CO, 1999.
- 21a. “*Water Masing in Orion*”, S. D. Doty. Contributed to the 193rd Meeting of the American Astronomical Society, Austin, TX, 1999.
- 20a. “*A Detailed Model for the Dust Emission from W Hydrae*”, S. L. Doty, S. D. Doty, & T. Sutherland*. Contributed to the 193rd Meeting of the American Astronomical Society, Austin, TX, 1999.
- 19a. “*Mass Loss from the Evolved Star W Hydrae: A Clue to Galactic Material Reprocessing?*”, T. Sutherland* & S. D. Doty. Contributed to the Colorado/Wyoming Section of the American Association of Physics Teachers, Denver, CO, 1997.
- 18a. “*Detailed Modeling of Dense Cloud Cores*”, S. D. Doty & D. A. Neufeld. Contributed to the 1997 Spring Washington Area Astronomers Meeting, College Park, MD, 1997.
- 17a. “*A Detailed Model of Dense Clouds -- Observational Implications*”, S. D. Doty. Contributed to the 189th Meeting of the American Astronomical Society, Toronto, Canada, 1997.
- 16a. “*On the Effects of Dust and Detailed Radiative Transfer on CO-determined Mass Loss Rates*”, S. Doty & S. Doty. Contributed to the 189th Meeting of the American Astronomical Society, Toronto, Ontario, Canada, 1997.
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- 14a. “*A Detailed Model of Dense Clouds*”, S. D. Doty & D. A. Neufeld. Contributed to the 187th Meeting of the American Astronomical Society, San Antonio, TX, 1996.
- 13a. “*On the Reliability of the Escape Probability Method of Calculating Line Strengths*”, S. D. Doty & D. A. Neufeld. Contributed to the 1995 Spring Meeting of the American Physical Society, Youngstown, OH, 1995.
- 12a. “*Transient Heating in the Chamaeleon Diffuse Cloud: VSGs, PAHs, or HACs?*”, S. D. Doty, C. M. Leung, & D. C. Lis. Contributed to the 184th Meeting of the American Astronomical Society, Minneapolis, MN, 1994.

11a. “*Models of Evolved Carbon-Rich Circumstellar Envelopes: Effects of Grain Surface Chemistry*”, S. D. Doty & C. M. Leung. Contributed to the 183rd Meeting of the American Astronomical Society, Washington, D. C., 1994.

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2a. “*A Critical Evaluation of Analysis Methods in the Study of Infrared Sources*”, S. D. Doty & C. M. Leung. Contributed to the 22nd Fall Meeting of the Astronomical Society of New York, Schenectady, NY, 1989.

1a. “*Some Diagnostic Problems in the Study of Infrared Sources: A Critical Evaluation*”, S. D. Doty & C. M. Leung. Contributed to the 173rd Meeting of the American Astronomical Society, Boston, MA, 1989.

*Indicates the individual is/was an undergraduate at MSCD / UCD / DU