EVIDENCE OF PERFORMANCE

YEAR: 2019

Name: David C. Collins Rank: _

A. YOUR MOST SIGNIFICANT CONTRIBUTIONS FOR THIS YEAR. Please select from this document what you consider were your most significant contributions in each of the areas of teaching, research and service. PLEASE LIST THEM IN BULLET FORM AND ICLUDE A BRIEF DESCRIPTION AND/OR SUPPORTIVE INFORMATION AS SUB-BULLETS. If there is something important that you would like to mention which lies outside these categories, please place it in a category named "Other" at the bottom of this page.

Teaching:

- AST-4419/AST 5418, Extragalactic Astronomy (Spring)
- AST-4341/AST-5342, Hydrodynamcis for Astrophysics (Fall)
- Four PhD students, two undergraduate, one postdoc.

Research:

- One paper accepted, one submitted
- Two presentations
- Several grant proposals

Service:

- Qual committee (writing, grading, both quals in 2019)
- Web committee (Chair)
- Saturday Morning Physics
- PAI committee

B. PAPERS PUBLISHED THIS YEAR. Please list by citation all papers of which you were an author that appeared during 2019. (Designate whether refereed, conference proceeding, abstract etc.)

- "The Impact of Enhanced Halo Resolution on the Simulated Circumgalactic Medium" Hummels, Cameron B.; Smith, Britton D.; Hopkins, Philip F.; O'Shea, Brian W.; Silvia, Devin W.; Werk, Jessica K.; Lehner, Nicolas; Wise, John H.; Collins, David C.; Butsky, Iryna S. ApJ 2019, 882, 156

C. PAPERS IN PRESS. Please list by citation all such papers that were accepted but did not appear during 2019.

D. PAPERS SUBMITTED. Please list all papers that were submitted by you but were not yet accepted during 2019.

- "The Power Spectra of Polarized, Dusty Filaments", Huffenberger, K.; Rotti, A., Collins, D. C., Submitted to ApJ, ArXiv 2019arXiv190610052H

E. INDIVIDUAL TALKS. Please list all conference, symposia, colloquia, seminar and other individual talks that you gave during 2019. (Designate invited talks.)

- "Interpreting CMB Foregrounds," *Big Apple Magnetic Fields*, Flatiron Institute for Computational Astrophysics Jan 25, 2019
- "Turbulent Space Magnetic," FSU Department of Scientific Computing, Feb 2, 2020.

F. GRANT FUNDING. Please indicate your research funding for 2019. Include any submitted (even if not funded) or pending proposals. Include the FSU Project #.

Funded

1. "Magnetic Fields in the Formation of Molecular Clouds, Filaments, and Cores". NSF AAG. FSU id 037693. $298,492 09/01/2016 - 08/31/2019
2. "Modeling CMB polarization foregrounds and their isotropy violation" NASA ATP. 01/08/2017 - 01/07/2020 $428,043.00
3. "Signatures of Type Ia Supernovae Explosions and their Cosmological Implications" NSF AAG FSU id 039518 10/01/2017 - 09/31/2020 $460,498

Rejected or Pending Rejection

1. "Unravelling the Radio Sky: Synchrotron Emission and the Extragalactic Radio Background" NASA ADAP $498,000 (rejected)

2. "Laser Experiements on the Turbulent Formation of Stars" National Ignition Facility shot proposal (rejected)

3. "Simulating CMB Foregrounds" NASA ATP $510,000 (rejected)

4. "SNE Ia: Imprints of the Explosion & Projenitor, Model-Independent Relations & Cosmology" NSF AAG $498,000(pending)

5. "Simulating Cosmic Magnetism" NSF AAG $282,000 (pending)

6. "CMB Polarization Foreground Effects on B-modes and Lensing" NSF AAG $533,000 (pending)

7. "Mitigating Galactic Foreground Contamination for CMB-S4 Lensing and Delensing" DOE $683,000 (pending)

G. DEPARTMENTAL COMMITTEE SERVICE. Please list all departmental committees on which you served during 2019. Also please indicate your committee assignment for this (spring) semester.

Both 2019 and Spring 2020

- Qual committee (writing, grading, proctoring both quals in 2019)
- Web committee (Chair)
- Saturday Morning Physics
- PAI committee (Chair)

H. UNIVERSITY AND SUS SERVICE. Please list all University and SUS committees, task forces, and governing bodies on which you served during 2019.

I. INTERNATIONAL, NATIONAL, AND REGIONAL SERVICE. Please list all international, national, and regional bodies on which you served, together with any reviewing activities (journals, proposals), during 2019.

- Continued support and development of the open-source community astrophysics simulation software, Enzo.
- NASA Astrophysics Theory proposal review panel
- Refereed papers

J. OFFICES HELD. Please list all offices in organizations related to your activity as a professional faculty member held by you during 2019.

K. HONORS RECEIVED. Please list all professional honors received by you during 2019.

L. GRADUATE DEGREES AWARDED. Please list all graduate students who received degrees under your direction during 2019.

M. GRADUATE STUDENT DIRECTION. Please list all graduate students whose work you directed during 2019 but who did not receive degrees. Include date joined group, prospectus (expected/passed) date, and expected graduation date.

1. Dan Le. Prospectus Dec 2019. Joined Jan 2015. Expected graduation early 2021.
2. Kye Stalpes. Prospectus Dec 2019. Joined Jan 2016. Expected graduation late 2021
3. Luz Jimenez. Pre-qual. Joined July 2016 as a Master's student. Expected graduation 2024.
4. Braňo Rabatin. Pre-prospectus. Joined Spring 2019. Expected graduation 2025.

N. GRADUATE STUDENT COMMITTEES. Please list all graduate students on whose supervisory committees you served but for whom you were not Major Professor during 2019. Include name of Major Professor and department if outside of Physics.

1. Bloor, Erica
2. Garcia, Carlos
3. Knorr, Erica (Chemistry, Ken Hanson)
4. Lakey, Vincent
5. Mabanta, Quntin
6. Oz, Yavuz
7. Rosales, Daniel (GFDI/Scientific Computing. Kevin Speer)

O. UNDERGRADUATE SUPERVISION. Please list all undergraduate students whose research activities you directed during 2019. Include a research title or brief description.

1. Schoedel, Douglas. "Simulations of Thermally Unstable Gas for CMB Foreground Decontamination."
2. Bosch, Dakota. Performed simulations of MHD wave advection for use in CMB foreground studies.

P. CLASSES TAUGHT. Please list all classes you taught during 2019 and what you are teaching this semester. Include the number of students in each class.

- AST-4419/AST 5418, Extragalactic Astronomy (Spring 2020, 10 students)
- AST-4341/AST-5342, Hydrodynamcis for Astrophysics (Fall 2019, 8 students)
- AST-4419/AST 5418, Extragalactic Astronomy (Spring 2019, 8 students)

Q. DIS SUPERVISION. Please list all DIS (Directed Individual Study) students you directed during 2019.

- Dan Le
- Luz Jimenez
- Kye Stalpes
- Braňo Rabatin
- Doug Schoedel

R. OUTREACH ACTIVITIES. Please list all outreach activities that you have participated in during 2019.

- Ask A Scientist (Organizer, roughly monthly)
- Saturday Morning Physics

S. OTHER ITEMS. Please detail any other items that you feel will help give an adequate picture of your performance during 2019.

T. SPCI EVALUATIONS. Please attach a copy of all student evaluation SPCI form summary pages for your teaching during 2019.