

Zach Pace

Curriculum vitae

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WORK EXPERIENCE

AUG 2015 – PRESENT

University of Wisconsin-Madison

Research Assistant — Advisor: Prof. C.

Tremonti

We use a novel technique to estimate total gas column densities, dust-to-gas, and dust-to-metal ratios, using rest-frame optical spectra from the Sloan Digital Sky Surveys' MaNGA project, which will take integral-field (spatially-resolved) optical-NIR spectra of nearly 10,000 nearby galaxies by 2020.

AUG 2014 – 2015

University of Wisconsin-Madison

Research Assistant — Advisor: Prof. E.

Wilcots

We search for signs of co-evolution (in particular, ram-pressure stripping and strangulation) in the NGC2563 group of galaxies, by studying the star-formation history, gas content, and gas dynamics of the group members (Paper in prep.)

JUNE – AUG '14

Space Telescope Science Institute

Summer Student — Advisor: Dr. Gabe

Brammer

Using new HST-ACS images of the Abell2744 cluster (obtained through the Hubble Frontier Fields program), we placed additional photometric constraints on the redshift of Abell2744_Y1. Our approach considered dusty galaxy models and accounted for noise variations across the field.

MAY – AUG '13

University of Minnesota

Summer Student (Physics REU) —

Advisor: Prof. Lucy Fortson

Investigated relationship between galaxy color & absolute magnitude, and arm properties, as found by citizen scientists in the Galaxy Zoo 2 project (Paper in prep.)

EDUCATION

'16 – '19 **Astronomy and Astrophysics**
PH.D.
University of Wisconsin-Madison

'14 – '16 **Astronomy and Astrophysics**
M.S.
University of Wisconsin-Madison

'10 – '14 **Physics**
B.S.
University at Buffalo, SUNY

'10 – '14 **Mathematics**
B.A.
University at Buffalo, SUNY

GRANTS & FELLOWSHIPS

2015 **Research Travel Award**
\$1200
Graduate School, UW-Madison

2015 **Bautz Travel Fellowship**
\$1500
UW-Madison Astronomy Dept.

'10 – '14 **Presidential Scholarship**
\$88,405
University at Buffalo, SUNY

AWARDS

2015 **Darrell Cain Award for Excellence**
Students for the Exploration and Development of Space, USA

2014 **Todd Hawley Award for Student Leadership**
Students for the Exploration and Development of Space, USA

2014 **Outstanding Senior**
University at Buffalo Physics Dept.

'10 – '14 **Honors College**
University at Buffalo, SUNY

TELESCOPE TIME

2016 **ARO 12 m (millimeter)**
1000 hrs (Member, MaNGA-ARO Survey of CO Targets)

2015B **WIYN 3.5 m**
2 half-nights (PI)

2015A **WIYN 3.5 m**
3 full nights (Co-I)

TALKS & POSTERS

- 2015 **Pace, Z.** "Integral Field Spectroscopy, or: How I Learned to Stop Worrying and Love the ISM"
UW-Madison Graduate Lectures for Undergrads; Madison, WI
- 2015 **Pace, Z., Wilcots, E.** "A preliminary SparsePak study of NGC 2563 Galaxy Group"
Contributed Talk; SDSS-IV MaNGA Meeting; Lexington, KY
- 2014 **Pace, Z., Willett, K., Fortson, L., Kinney, W.** "Galaxy Zoo 2: Statistics of Morphological Sub-Populations"
Poster; 223rd AAS Meeting; Washington, DC
- 2013 **Pace, Z.** "Galaxy Zoo 2: A case-study in pattern recognition"
Guest Lecture; CS 574 (Introduction for Machine Learning); University at Buffalo

SERVICE & TEACHING

'14 – PRESENT

Students for the Exploration and Development of Space, USA

Vice-Chair, Board of Directors

Manages SEDS-USA Board of Advisors (alumni, founders, and friends), and funds national projects (especially the SpaceVision national conference, a \$60,000 yearly event) through external sponsorship.

'15 – PRESENT

UW-Madison Astronomy Dept.

Universe in the Park

Delivered presentations to groups of 20 – 150 in various WI state parks, including interactive telescope sessions (both solar and nighttime), aimed at solar system and deep-sky objects.

'15 – PRESENT

UW-Madison Astronomy Dept.

Science Lunch Coordinator

'15 – PRESENT

UW-Madison Astronomy Dept.

Colloquium Committee

'15 – PRESENT

Sloan Digital Sky Surveys

Blog Curator (MaNGA)

Writes & edits MaNGA-related content for the SDSS blog (about 25% of total content), and facilitates communication by scientists to the interested public via accessible summaries of recent project papers.

SPRING '15

UW-Madison Astronomy Dept.

Teaching Assistant — Supervisor: Prof.

Elena D'Onghia

Six weekly discussion sessions, including lesson planning, quiz composition, and lab demonstrations for ASTRO 103 (The Evolving Universe). Held weekly office hours and special homework & math help sections.

FALL '15

UW-Madison Astronomy Dept.

Graduate Support Student — Supervisor:

Prof. Ellen Zweibel

As-needed resource in introductory, computing-focused course for undergraduate astronomy majors.

CONFERENCES ORGANIZED

2016 **SDSS-IV Collaboration Meeting**
LOC

'12 – '15 **SEDS SpaceVision**
Sponsorship Manager (Ex Officio)

PUBLIC PROJECTS (PERSONALLY MAINTAINED)

2015 **seurat (Github)**
Gaussian processes for integral-field spectroscopic emission-line fitting (allows arbitrary kinematic components, built around george & emcee). Unstable, in active development.

2015 **MaNGA-fitting (Github)**
Techniques for fitting stellar and gas populations to SDSS-MaNGA data. Includes an approximate technique for convolving an array with a kernel of varying width. Stable.

2015 **sdss-plates (Github)**
Retrieves information about objects within Sloan Digital Sky Survey spectroscopic plug plates, creates a field map, and creates an interactive webpage that serves basic object info on mouseover and redirects to an object's webpage on click. Stable, but expanding.

2014 **SpACT (Github)**
Tools for flux-calibrating spectra from the SparsePak integral field unit (IFU) at the WYN 3.5 meter telescope at Kitt Peak, AZ. Stable, but under improvement.

STUDENTS SUPERVISED

SUMMER '15

Linnea Dahmen

Middleton HS (WI), Class of 2017

Basic python programming skills, exploratory data-mining of Galaxy Zoo 2 Main Sample & associated classifications, automated FITS image retrieval, and first exposure to basic astronomy concepts.

COMMUNICATION SKILLS

ENGLISH Native speaker

GERMAN Oral: basic — Written: fair

SOFTWARE SKILLS

EXPERIENCED Python, Mathematica, git,
bash/*nix

INTERMEDIATE \LaTeX , SQL, R, HTML, CSS

BASIC Matlab, C/C++, Stan,
IRAF/PyRAF

SOCIETIES

2014 **Phi Beta Kappa**
Omicron of New York

2010 **Students for the Exploration and Development of Space, USA (SEDS-USA)**