# DOUGLAS H. LAURENCE

Department of Physics
Florida International University
Miami, FL, 33199

www.blazartheory.com
dhlaurence@gmail.com

## PERSONAL INFORMATION

**Born**: May 21, 1991 **Birthplace**: Miami, FL

## RESEARCH INTERESTS

- Theoretical Astrophysics
- Blazar Micro-variability
- Cosmology
- High Energy Astrophysics

## EDUCATION

**Ph.D., Physics** (expected) Spring, 2018
Florida International University

Dissertation: *A Theoretical Model for Microvariability in Blazar Jets*
Advisor: Dr. James R. Webb

**M.S., Physics** (non-thesis option, awarded en-route to Ph.D.) 2017
Florida International University

**B.S., Mathematics** (expected) 2018
Indiana University

**B.S., Physics** (cum laude) 2011
Florida International University

**A.A., General Studies** (w. highest honors) 2008
Miami-Dade College

## APPOINTMENTS

**Nova Southeastern University** Ft. Lauderdale, FL
Adjunct Professor, Physics and Mathematics 2017 – **Present**

**Florida International University** Miami, FL
Teaching Assistant, Department of Physics 2011 – 2016
Adjunct Professor, Department of Physics 2011
Tutor, University Learning Center 2009 – 2012

**Clutch Prep** Miami, FL
Lead Instructor, Physics 2016 – 2017
(Acting) Lead Instructor, Mathematics 2016 – 2017

**The Princeton Review** Miami, FL
Content Developer, Physics 2012 – **Present**
Instructor, Physics 2011 – 2015
"Master Level" Tutor, Physics 2011 – 2013

## AWARDS & FELLOWSHIPS

**Patricia & Philip Frost Museum of Science** Miami, FL
Science Communication Fellows Program Academic Year, 2015/2016

**National Science Foundation REU** Miami, FL
Quantum Optics Academic Year, 2010/2011

## PROFESSIONAL SOCIETIES

The American Astornomical Society (AAS)
The American Physical Society (APS)

## RESEARCH CONSORTIA

The Southeastern Association for Research in Astronomy (SARA)

## PUBLICATIONS

### Refereed Papers

1. J.R. Webb, D.H. Laurence, et al, "Coordinated Micro-Variability CIRCE Polarimetry and SARA JKT Multi-Frequency Photometry Observations of the Blazar S5 0716+71," *Galaxies*, **5**(4), 77 (2017).
2. G. Bhatta, et al, "Multifrequency Photo-polarimetric WEBT Observation Campaign on the Blazar S5 0716+714: Source Microvariability and Search for Characteristic Timescales," *Astrophys. J.*, **831**(1), 92 (2016).
3. G. Bhatta, et al, "Discovery of a Highly Polarized Optical Microflare in Blazar S5 0716+714 during the 2014 WEBT Campaign," *Astrophys. J. Lett.*, **809**(2), L27 (2015).

### Papers in Preparation

1. J.R. Webb, D.H. Laurence, et al., "The Nature of Microvariability in Blazars"
   *to be submitted to Astronomy & Astrophysics*
2. D.H. Laurence, "Novel *a priori* Predictions of the Modified KRM Jet Model"
   *to be sumitted to the Astrophysical Journal*

### Books – Authored

1. Laurence, D.H., The Princeton Review, 2016, "High School Physics Unlocked", New York: Random House

**Books – Production Team Leader**

1. The Princeton Review, 2015, "Cracking the AP Physics 2 Exam 2016 ed.", New York: Random House

**Books – Content Reviewer**

1. The Princeton Review, 2013, "Cracking the SAT Physics Subject Test 2013-2014 ed.", New York: Random House
2. The Princeton Review, 2012, "Cracking the AP Physics B Exam 2013 ed.", New York: Random House
3. The Princeton Review, 2012, "Cracking the AP Physics C Exam 2013 ed.", New York: Random House

## POSTER PRESENTATIONS

1. Dhalla, S., Webb, J.R., Bhatta, G., Laurence, D., 2014, "Analysis of Kepler Lightcurves Using Turbulent Jet Model", AAS 223 #250.03
2. Webb, J.R., Laurence, D., Bhatta, G., et al., 2013, "Interpretation of Blazar Micro-Variability as Turbulent Jets", AAS 222 #215.03

## INVITED LECTURES & SEMINAR & COLLOQUIA

1. "Newtonian Mechanics, Stars, and Astronomy", Florida International University, Miami FL, Oct. 2014
2. "Particle Acceleration and Synchrotron Emission in Blazar Jets", Astronomy Colloquia, Florida International University, Miami FL, Nov. 2013
3. "Variability in the Synchrotron Spectrum of Blazars", Society of Physics Students, FIU Chapter, Miami FL, Oct. 2013
4. "A Hadronic Synchrotron Mirror Model for the "Orphan" TeV Flare in 1ES 1959+650", Astronomy Colloquia, Florida International University, Miami FL, Sep. 2013
5. "Variability in the Synchrotron-Self Compton Model of Blazar Emission", Astronomy Colloquia, Florida International University, Miami FL, Mar. 2013
6. "Neutrino Oscillations and their Consequences for the Standard Model of Particle Physics", Department of Mathematics, Florida International University, Miami, FL, Mar. 2012
7. "Fictitious Forces", Department of Mathematics, Florida International University, Miami FL, Sep. 2011
8. "How to Study for Math", Center for Academic Success, Florida International University, June 2011

## TELESCOPE EXPERIENCE

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| **Roque de los Muchachos Observatory** | **La Palma, Canary Islands, Spain** |
| Gran Telescopio Canarias (GTC) | 10.4m optical telescope |
| SARA East Telescope (a.k.a. JKT) | 1.0m optical telescope |
| **Kitt Peak National Observatory** | **Tuscon, AR** |
| SARA North Telescope | 0.9m optical telescope |
| **Cerro Tololo Inter-American Observatory** | **La Serena, Chile** |
| SARA South Telescope | 0.6m optical telescope |
| **Stocker Astroscience Center** | **Miami, FL** |
| Astronomical Consultants and Equipment (ACE) Telescope | 24-inch optical telescope |

## COURSES TAUGHT

**Nova Southeastern University**
PHYS2350: General Physics I/Lab (combined lectured/lab)

**Florida International University**
AST1002L: Descriptive Astronomy Lab (for non-science majors)
AST2003L: Solar System Astronomy Lab (for non-science majors)
AST2004: Stellar Astronomy, assisted (for non-science majors)
AST2004L: Stellar Astronomy Lab (for non-science majors)
PHY2048: Physics I w. Calculus, *recitation*
PHY2048L: General Physics Lab I
PHY2049: Physics II w. Calculus, *recitation*
PHY2049L: General Physics Lab II
PHY2054: Physics II w.o. Calculus, *assisted*

## SERVICES TO COMMUNITY & SCHOOL

- Star Parties at Florida International University
  *Parties open to the public, where vsitors get a chance to see lectures from gues speakers, intermingle with those in the field of astronomy, and perhaps most importantly, get to use telescopes, often for the first time. Organized by Dr. James R. Webb.*
- Middle / High School Field Trips Tours for Stocker Astroscience Center
  *It is quite frequent that middle school or high school classes will come to the observatory for tours, to learn about the research we do, etc. Organized by Dr. James R. Webb.*
- Physics and Mathematics Judge, McNair Undergraduate Research Competition
  *The undergraduate McNair fellowship program held a research competition in the fall of 2017 at Florida International University, which I was invited to to judge the 15-20 minute PowerPoint presentations of the physics and mathematics undergraduate researchers.*

## TECHNICAL STRENGTHS

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| **Computer Languages** | Fortran, IDL, MATLAB |
| **Document Preparation** | LaTeX |