# Karl JAEHNIG

CONTACT
INFORMATION

Vanderbilt University
Department of Physics & Astronomy
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Nashville, TN 37235, USA
**Citizenship**: United States of America

EDUCATION

**Vanderbilt University**, Nashville, Tennessee, USA
Ph.D, Astrophysics, Sept 2017 –
Thesis Advisor: Dr. Kelly Holley-Bockelmann

**Fisk University**, Nashville, Tennessee, USA
M.A., Physics, Aug 2015 – Aug 2017
Thesis: "Evidence for a decreasing spectroscopic binary fraction within the IN-SYNC sample."
Thesis Advisor: Dr. Keivan G. Stassun

**University of Florida**, Gainesville, Florida, USA
B.S., Major: Astronomy – December 2011

RESEARCH
EXPERIENCE

**Vanderbilt University - Graduate Teaching Assistant** (Aug 2017 – )
Teaching assistant for class of ∼250 students
Research the behavior and evolution of stellar radius for pre-main-sequence stars
Develop simulations of star clusters to understand properties of binary star formation and dynamics

**Vanderbilt University - Graduate Research Assistant** (Aug 2015 – Aug 2017)
Discovered possible binaries in young nebulous clouds through analysis of radial velocity variations
Investigated raw binary fractions as a function of age in young star forming regions
Developed Monte Carlo simulations to reconstruct true binary fractions using Bayesian Inference

**University of Florida - Post-Baccalaureate Researcher** (Aug 2013 – Jul 2015)
Developed statistical algorithm, the *Angular Dispersion Parameter* (ADP) to quantify sub-structure in star forming clusters
Applied ADP to Orion Nebula Cluster and older globular clusters to study systematics and biases
Studied sub-structure of 20 young star forming regions within MYStIX survey using ADP

RESEARCH
INTERESTS

- N-BODY simulations of young star clusters to understand the formation of Blue Straggler stars

- Structure and kinematics of young star forming regions, focusing on binary star formation and stellar evolution

- Computational astronomy and statistics, specifically using Python, and R-code

PUBLICATIONS:
REFEREED

1. **Jaehnig, Karl O.**, Bird, Jonathan C., Stassun, Keivan G., Da Rio, Nicola, Tan, Jonathan C., Cotaar, Michiel, and Somers, Garrett, IN-SYNC. VII. Evidence for a Decreasing Spectroscopic Binary Fraction (from 1 to 100 Myr) within the IN-SYNC Sample, 2017, 18 pages, ApJ, 851, 14

2. **Jaehnig, Karl O.**, Da Rio, Nicola, and Tan, Jonathan C., The Structural Evolution of Forming and Early Stage Star clusters, 2015, 7 pages, ApJ, 798, 126

3. Da Rio, Nicola, Tan, Jonathan C., and **Jaehnig, Karl O.**, The Structure, Dynamics, and Star Formation Rate of the Orion Nebula Cluster, 2014, 16 pages, ApJ, 795, 55

PRESENTED
TALKS

*Jan 2016* "Binaries at Birth: Stellar Multiplicity in Embedded Clusters from Radial Velocity Variations in the INSYNC Survey"
$227^{th}$ American Astronomical Society Meeting, ID.404.02, Kissimmee, Florida

CONFERENCE
POSTERS &
ABSTRACTS

- "Binaries at Birth: Stellar Multiplicity in Embedded Clusters from Radial Velocity Variations in the INSYNC Survey"
**Jaehnig, Karl O.**, Bird, Jonathan, Stassun, Keivan G., and the INSYNC Survey Team
2016, Statistical Challenges in Modern Astronomy VI, Pittsburgh , PA

- "The Structural Evolution of Forming and Early Stage Star clusters"
**Jaehnig, Karl O.**, Da Rio, Nicola, and Tan, Jonathan C.
2016, $47^{th}$ Division of Dynamical Astronomy Meeting, Nashville, Tennessee

PROFESSIONAL
WORKSHOPS

*April 2018* Modest 18a Workshop, Leiden University, Netherlands

*Jan 2017* Graduate Student Professional Development Workshop, Vanderbilt University

*June 2016* Summer School in Statistics for Astronomers XII, Penn State University, State College

*May 2016* Astro-Statistics Workshop, Vanderbilt University

PROFESSIONAL AND
ACADEMIC
AFFILIATIONS

- Sigma Xi Scientific Research Honor Society: 2016–present
- Division of Dynamical Astronomy (DDA): 2016–present
- American Astronomical Society (AAS): 2015–present