

NICHOLAS RUI

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EDUCATION

B.A. Physics, Astrophysics (in progress) 2016 – (2020)

University of California, Berkeley — College of Letters and Science
Berkeley, CA, GPA: 3.989

High School Diploma 2012 – 2016

Rancho Bernardo High School
San Diego, CA

SKILLS

Programming languages: python, MATLAB


Formatting languages: \LaTeX , HTML, CSS


Software: *Mathematica*, Microsoft Office, LabVIEW

Other: git

RESEARCH


Nanoscale sensing using nitrogen-vacancy centers ([site](#)) 2018 —

Research Advisor: *Norman Y. Yao* 

Graduate Mentor: *Satcher Hsieh* 

- Interests: *nitrogen-vacancy centers; nanoscale sensing; spin ensembles; photon statistics; quantum optimal control; high pressure; diamond anvil cells*

Young massive clusters in the Galactic Center ([site](#)) 2016 —

Research Advisor: *Jessica R. Lu* 

Graduate Mentor: *Matthew W. Hosek Jr.* 

- Interests: *star cluster formation, dynamical structure, and evolution; Arches and Quintuplet clusters; Galactic Center; young massive clusters; astrometry*

REFEREED PUBLICATIONS

[o] **Rui, N. Z.**; Hosek Jr., M. W.; Lu, J. R.; Clarkson, W. I.; Anderson, J.; Morris, M. R.; Ghez, A. M.; *The Quintuplet Cluster: Extended Structure and Tidal Radius.* (submitted to *Astrophys. J.*)

[o] Hsieh, S.; Bhattacharyya, P.; Zu, C.; Mittiga, T.; Smart, T. J.; Machado, F.; Kobrin, B.; Höhn, T. O.; **Rui, N. Z.**; Kamrani, M.; Chatterjee, S.; Choi, S.; Zaletel, M.; Struzhkin, V. V.; Moore, J. E.; Levitas, V. I.; Jeanloz, R.; Yao, N. Y.; *Imaging stress and magnetism at high pressures using a nanoscale quantum sensor.* (submitted to *Science*)

[1] Mittiga, T.; Hsieh, S.; Zu, C.; Kobrin, B.; Machado, F.; Bhattacharyya, P.; **Rui, N. Z.**; Jarmola, A.; Choi, S.; Budker, D.; Yao, N. Y.; *Imaging the local charge environment of nitrogen-vacancy centers in diamond.* *Phys. Rev. Lett.*, 2018

POSTERS AND TALKS

[2] **Rui, N. Z.**; Hosek Jr., M. W.; Lu, J. R.; Anderson, J.; Morris, M. R.; Ghez, A. M.; Clarkson, W. I.; *Dynamical Structure of the Quintuplet Cluster*, Department Lunch Talk, Berkeley, CA, April 2018. (talk)

[1] **Rui, N. Z.**; Hosek Jr., M. W.; Lu, J. R.; Anderson, J.; Morris, M. R.; Ghez, A. M.; Clarkson, W. I.; *Structure of the Quintuplet Cluster*, Physics Undergraduate Poster Session, Berkeley, CA, April 2018. (poster)

RELEVANT COURSEWORK

Physics: classical mechanics, classical electromagnetism, optics, quantum mechanics, quantum information and computing, particle physics, statistical mechanics (Spring 2019), special and general relativity (Spring 2019), atomic physics (Spring 2019)

Astrophysics: cosmology, planetary astrophysics, astrophysical fluid dynamics (Spring 2019)

Mathematics: multivariable calculus, linear algebra, differential equations

Other: circuit design

TEACHING

Splash at Berkeley ([site](#))

- M507: *Mostly Complex*, Spring 2019
- S391: *Why Quantum?*, Fall 2018 (*with A. Acharya*)
- S392: *Spacetime*, Fall 2018 (*with A. Acharya*)
- Classes affiliated with Splash at Berkeley (grades 9-12)

Astronomy 98/198: *Python for Astronomers*

- Spring 2019 – Co-facilitator *with O. Lyau, A. Ye, A. Xu, R. Dana, S. Berger* (faculty sponsor: Daniel Weisz) ([site](#))
- Spring 2018 – Co-facilitator *with M. Fetzer, O. Lyau* (faculty sponsor: Mariska Kriek)
- 2-unit class affiliated with Democratic Education at Cal (DeCal)

Course Reader

- Fall 2018 – Physics 110A: *Electromagnetism and Optics* (instructor: Kam-Biu Luk)

AWARDS

Isadore Pomerantz Endowment Award (2018-2019)

Dean's List (2016-2018)

Honors to Date (2016-2018)

Berkeley Physics Undergraduate Research Scholar (2018)

National Merit Scholarship Finalist (2016)

SERVICE AND OUTREACH

Society of Physics Students ([site](#))

- 2018-2019: Co-vice president *alongside R. Pan*
- 2017-2018: Outreach coordinator

Committee Appointments

- Major Curriculum Committee (2018 —)
- Undergraduate Student Services Astrophysics Committee (2019 —)