Joseph A'Hearn

Curriculum Vitae
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Department of Physics
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EDUCATION

Ph.D.	Physics	University of Idaho, Moscow, ID	expected 2022
B.S.	Physics & Philosophy	University of Illinois, Urbana-Champaign, IL	2016
B.A.	Philosophy	Pontifical Athenaeum Regina Apostolorum, Rome, Italy *summa cum laude*	2011
A.A.	Humanities	Legion of Christ College of Humanities, Cheshire, CT	2009

PUBLICATIONS

REFEREED JOURNAL ARTICLES

M.A. Muñoz-Gutiérrez, A.P. Granados Contreras, G. Madeira, J.A. A'Hearn, S.M. Giuliatti Winter, The long-term dynamical evolution of Pallene (Saturn XXXIII) and its diffuse dusty ring, *The Monthly Notices of the Royal Astronomical Society*, stab3627 (2021)

J.A. A'Hearn, M.M. Hedman, D.P Hamilton, Modeling Saturn's D68 Clumps as a Co-orbital Satellite System, *The Planetary Science Journal* 2:74 (2021)

J.A. A'Hearn, M.M. Hedman, M. El Moutamid, Dynamics of multiple bodies in a corotation resonance: Conserved quantities and relevance to ring arcs, *The Astrophysical Journal* 882:66 (2019)

MANUSCRIPTS IN PREPARATION

J.A. A'Hearn, M.M. Hedman, C.R. Mankovich, H. Aramona, M.S. Marley, Ring seismology of the ice giants Uranus and Neptune

J.A. A'Hearn, M.M. Hedman, D.P Hamilton, Symmetric longitudinal expansion mode for $N = 3$ equal-mass co-orbitals

E. Fernández-Valenzuela and Lucky Star and Hi'iaka Occultation Teams (including J.A. A'Hearn), Physical properties of Hi'iaka from stellar occultation data

AWARDS

2021 NASA Jet Propulsion Laboratory Summer Internship, *Orbital Evolution of Neptune's Rings and Moons*: $9,000

2019 Outstanding Research Poster, Graduate Division at the University of Idaho College of Science Research Expo, Moscow, ID: *Are Moonlets Hidden Among the Clumps in Saturn's Innermost Ring?:* $100

American Astronomical Society Hartmann Travel Grant: $500 to attend the 2019 EPSC-DPS Joint Meeting in Geneva, Switzerland

INVITED TALKS

2021 JPL ICE Seminar Talk (8/26): *Ice giant ring seismology and inner satellite dynamics*

São Paulo State University Orbital Dynamics and Planetology Group Seminar Talk (4/30): *Gravitational interactions among small Saturnian co-orbital bodies*

CONFERENCE PARTICIPATION

2021 American Geophysical Union Meeting, New Orleans, LA / Virtual: Talk: *Ice Giant Ring Seismology*

Division of Planetary Sciences Meeting, Virtual: Talk: *Ice Giant Ring Seismology*; E. Fernández-Valenzuela and Lucky Star and Hi'iaka Occultation Teams (including J.A. A'Hearn), *Physical properties of Hi'iaka from stellar occultation data*; Chair for Planetary Rings: Theory and Observations session Zoom Q&A

European Planetary Science Congress, Virtual: Talk: *Ice Giant Ring Seismology*; E. Fernández-Valenzuela and Lucky Star and Hi'iaka Occultation Teams (including J.A. A'Hearn), *The stellar occultations by the largest satellite of the dwarf planet Haumea, Hi'iaka*

Division on Dynamical Astronomy Meeting, Virtual: Talk: *Ice Giant Ring Seismology*; Chair for Rings, Disks, and Migration session Zoom Q&A

Triple Evolution and Dynamics, Virtual Workshop

2020 Division of Planetary Sciences Meeting, Virtual: Talk: *The long-term dynamical evolution of Saturn's moon Pallene and its diffuse dusty ring*

Division on Dynamical Astronomy Meeting, Virtual: Talk: *Periodic orbits for small N co-orbital satellite systems*

2019 College of Science Research Expo, Moscow, ID: Poster: *Are Moonlets Hidden Among the Clumps in Saturn's Innermost Ring?* (one of two awarded Outstanding Research Poster, Graduate Division)

European Planetary Science Congress – Division of Planetary Sciences Joint Meeting, Geneva, Switzerland: Poster: *Are Moonlets Hidden Among the Clumps in Saturn's Innermost Ring?*

Division on Dynamical Astronomy Meeting, Boulder, CO: Oral Presentation: *Are Moonlets Hidden Among the Clumps in Saturn's Innermost Ring?*

2018 Astronomy Northwest by Southwest Meeting, Vancouver, Canada

Division of Planetary Sciences Meeting, Knoxville, TN: Poster: *Dynamics of multiple bodies in a corotation resonance*

College of Science Research Expo, Moscow, ID: Poster: *Dynamics of multiple bodies in a corotation resonance*

Division on Dynamical Astronomy Meeting, San Jose, CA: Oral Presentation: *Dynamics of multiple bodies in a corotation resonance*

2017 Division of Planetary Sciences Meeting, Provo, UT: Poster: *Using four-body problems to explore Aegaeon's orbital evolution*

Numerical Integration Methods in Planetary Science Meeting, Toronto, Canada

2016 American Astronomical Society Meeting, San Diego, CA

American Astronomical Society Meeting, Kissimmee, FL

CAMPUS OR DEPARTMENTAL TALKS

2021 JPL Summer Internship Presentation: *Orbital evolution of Neptune's rings and moons*

University of Idaho 3-Minute Thesis Competition: *The role of small masses in sculpting the structure and orbital evolution of rings and moons*

2017 University of Idaho Physics Dept. Talk: *The Search for a Resonance for Saturn's Moon Pallene*

University of Idaho Physics Dept. Talk: *The Aegaeon 4-Body Problem*

TEACHING EXPERIENCE

Kepler Education, Instructor
Physics (with vectors and trigonometry) (Fall 2020-2021)
Astronomy (Fall 2020, Fall 2021)

Memoria Press Online Academy, Instructor
Physics (algebra-based) (2018-2021); (with vectors and trigonometry) (2021-2022)

University of Idaho Department of Physics, Teaching Assistant (sole instructor)
Astronomy Lab (Fall 2016, Fall 2017), Virtual Section Development (Fall 2020)
General Physics II Lab (electricity, magnetism, optics) (Spring 2017)

Legion of Christ College of Humanities, Instructor
World History (2012-13)
Latin (2012-13)
Koiné Greek (2012-13)
Physics (algebra-based) (Fall 2012)
Euclidean Geometry (Spring 2013)

RESEARCH EXPERIENCE

NASA Jet Propulsion Laboratory (virtual), Summer Internship with Mentor Ryan Park (2021), Orbital Evolution of Neptune's Rings and Moons

University of Idaho Department of Physics, Research Assistant for Matthew Hedman (2017-present), NASA Saturn's Faint Rings Grant, Uranian Rings Grant, Seismology of Uranus and Neptune Grant

SERVICE TO PROFESSION

Academic Journal Reviewer, *Monthly Notices of the Royal Astronomical Society* (2021)
University of Idaho Planetary Science Journal Club Coordinator (2020-2021)
Local Organizing Committee / Virtual Organizing Committee, Division of Planetary Sciences Meeting, Spokane, WA / Virtual (2020)
Name the Rover Judge, NASA Mars 2020 Mission (Perseverance) (2019)
Wiki Education Foundation Facilitator, Wikipedia Edit-a-thon, 228th AAS Meeting (2016)

COMMUNITY INVOLVEMENT/OUTREACH

PUBLIC

Interview on ice giant ring seismology for an Eos Magazine article (2021)
Interview on research and teaching for a University of Alabama student's English 1101 profile essay (2020)
Yuri's Night, Jewett Observatory, Pullman, WA: Talk on gravitational slingshots (2019)
Solar Eclipse Education and Outreach, Moscow Farmers Market, Moscow, ID (2017)
Splash at UIUC, Champaign, IL: Talk on the Big Bang and the end of the Universe (2016)
An Evening Under the Stars, Adler Planetarium, Chicago, IL: Representative of the University of Illinois Astronomical Society (2016)

CATHOLIC

YouTube Live, Guest talk on Padre Antônio Lemos, LC's Channel, "El papel de la Iglesia en la ciencia" (Spanish; on the Church's role in science) (2020)
Theology on Tap, Pocatello, ID: Talk on science and the Shroud of Turin (2019)
Vandal Catholic Encounter, Moscow, ID: Talk on extraterrestrial life and baptism (2019)
Faith & Science Symposium, Moscow, ID: Talk on the evolution of planet Earth (2019)
Science Fair, Summit Academy, Cottonwood, ID: Judge for the science fair (2018)
Vandal Catholic Encounter, Moscow, ID: Talk on whether we can know God exists (2018)
Catholics in the Professional World, Cottonwood, ID: Talks on life as a Catholic astrophysicist and on the Origin of the Universe (2018)
Theology on Tap, Pocatello, ID: Talk on the Origin of the Universe (2017)
Theology Buzz, Moscow, ID: Talk on the Origin of the Universe (2017)
Vandal Catholic Encounter, Moscow, ID: Talk on the Church's role in science (2017)
Vandal Catholic Encounter, Moscow, ID: Talk on science and the Shroud of Turin (2017)
Vandal Catholic Encounter, Moscow, ID: Talk on the Origin of the Universe (2017)
Evening Talk, Rolling Prairie, IN: Talk on the Origin of the Universe and Q&A (2016)
Spirit & Truth, Plainfield, IL: Talk on science and the Shroud of Turin (2015)
Fever Science & Faith Symposium, Urbana, IL: Talk on fine-tuning in the Cosmos (2015)
Newman Frontline Catholics, Champaign, IL: Talk on science and faith in dialogue (2014)
Spirit & Truth, Naperville, IL: Talk on science and faith in dialogue (2013)
Spirit & Truth, Plainfield, IL: Talk on science and faith in dialogue (2013)
Evening Talk, Cheshire, CT: Talk on science and the Shroud of Turin (2013)

MEDIA COVERAGE

Eos Magazine: Science News by AGU, "Can Uranus's Rings Reveal the Planet's Deepest Secrets?" (12/17/2021)

LANGUAGES

English – native
Spanish – fluent
Italian – proficient
Latin – proficient
Koiné Greek – proficient

PROFESSIONAL MEMBERSHIPS OR AFFILIATIONS

American Geophysical Union (Planetary Science) (since 2021)
American Astronomical Society: Division of Planetary Science and Division on Dynamical Astronomy (since 2017)
Society of Catholic Scientists (since 2017)