

Alex Filippenko Awarded the American Astronomical Society's 2022 Education Prize

Berkeley, CA – The American Astronomical Society, the country's premier astronomical association, announced today that the recipient of its 2022 Education Prize is Dr. Alex Filippenko, Distinguished Professor of Astronomy at UC Berkeley. The official citation reads, "The AAS Education Prize recognizes outstanding contributions to the education of the public, students, and/or the next generation of professional astronomers. For 2022 the recipient is Alex Filippenko (University of California, Berkeley), for his passionate and wildly popular teaching of non-science majors; his mentoring of hundreds of teaching assistants and undergraduate research students; his dedication to public education through lectures, TV documentaries, and video courses; his textbook and other popular writings; and his leadership in saving Lick Observatory, a prominent California observatory that faced defunding in 2014."

Winner of the most prestigious teaching awards at UCB and voted by students as the "Best Professor" on campus a record nine times, in 2006 Filippenko was named the Case/Carnegie National Professor of the Year among doctoral and research institutions, a singular recognition. He was honored with the 2007 Richtmyer Memorial Award of the American Association of Physics Teachers, and in 2011 he received the Emmons Award (for undergraduate teaching) of the Astronomical Society of the Pacific. He has produced 5 video courses with *The Great Courses*, coauthored an award-winning astronomy textbook, appears in (and/or has been scientific advisor to) more than 120 TV documentaries, and has given over 1000 public presentations. He brings humor, music, and science-themed T-shirts to his class lectures, and is famously known for his "Halloween lecture," where he dresses up as a black hole and showers the audience of 700+ students with handfuls of celestially-themed candy to illustrate Hawking radiation. His engagement extends beyond the classroom, including in-person and virtual lectures at Burning Man.

Filippenko enthusiastically shares, "I'm delighted to receive this award from the AAS, on whose Council I served decades ago. I'm proud to have sparked so much interest in science among young people, many of whom went on in STEM fields including data science, engineering, computer science, applied physics, medical physics, and science teaching. Bringing science and astronomy to the general public through lectures and video courses, educating eager undergraduates at UC Berkeley, mentoring postdoctoral scholars and students at all levels in research and teaching, contributing to various science documentaries, and helping to keep Lick Observatory operational have all been a great privilege, giving me much fulfillment and enjoyment. I can't imagine having had a better profession."

"Alex surely deserves getting this prize," says Emerita Professor of Astronomy Imke de Pater, one of Filippenko's faculty colleagues at UCB. "He has been a superb teacher for decades, in particular in the non-science-major classes – sparking these students' interest in science, which is hugely important these days while facing climate change." Dr. Dan Weisz, now a faculty member at Cal, writes "Alex inspired me to be an astronomer. I was drawn into astronomy through his introductory class during my first year as an undergraduate. By the end of the year, I was working in his research group. His passion, knowledge, and accessibility transformed astronomy from a passing hobby to a concrete career path. It's been a surreal experience going from being an undergraduate learning from him to being his colleague on the Berkeley faculty."

Heather Newman, a former student of his, writes, "Alex is the most influential professor and scientific mentor I've ever had. As an undergraduate student at Cal as well as in the years beyond that, Alex inspired me with his teaching style and his tremendous enthusiasm for science. His passion was contagious. His creativity for communicating difficult scientific concepts, as well as his humility in light of his extensive research findings and professional accomplishments, allowed him to be both accessible as a teacher and inspiring as a person."

Dr. Ryan Foley, now on the faculty at UC Santa Cruz, writes, "Alex is the most effective teacher I have ever met. He has the unique ability to inspire and engage every person in a very large lecture class, and the student outcomes are especially impressive. He has positively affected many lives through his public

appearances, classes, and mentoring.” Dr. Jay Pasachoff of Williams College, coauthor of *The Cosmos*, notes, “It has been wonderful to work with Alex on our textbook, in order to get up to date and definitive treatments of some of the most exciting results regarding supernovae and the structure of the Universe.”

It has been challenging to educate students and continue public outreach during the Covid-19 pandemic, but Filippenko seized upon the opportunity, providing more interactive contact hours with his students and conducting virtual star parties through Zoom. Using a special telescope with which he can collect and display images of celestial objects to online participants, he has held many astronomy salons and stargazing sessions for friends, donors, and various other groups. Prior to and during the pandemic, Filippenko creatively worked with several Fortune-500 companies (including Google) to assist with their employee benefits and retention through lectures, in-person and virtual stargazing, and mini-courses.

Among the hundreds of teaching assistants (TAs) Filippenko has had over the past 36 years at Cal, Dr. Aaron Lee (faculty member at St. Mary’s College) states, “Much can and has been said for how Alex’s popular astronomy course leaves a lasting impression on the students, but the same can be said for the TAs as well. My science communication skills exponentially improved from working with and observing him, and I do not doubt that my success as a professor at a teaching-centric college stems from the opportunities I had with him. They remain the most memorable parts of my graduate school experience.”

During his career, Filippenko has mentored hundreds of undergraduate research students, as well as dozens of graduate students and postdoctoral scholars. He received the UCB Distinguished Research Mentoring of Undergraduates Award in 2002. “As a graduate student,” notes Dr. Foley, “I was given the right balance of support and independence to maximize my potential and to transform me into an independent researcher.” Dr. Adam Riess, Physics Nobel Laureate and now a professor at Johns Hopkins University, was mentored by Filippenko as a UCB Miller Fellow in the 1990s, when they discovered the accelerating expansion of the Universe, driven by dark energy. Says Riess, “It is no exaggeration to say that Alex has taken education to a cosmic scale. I was surprised to discover even my own mother chose to learn about astronomy from his educational recordings. As a former postdoc working with Alex and like so many others, I learned a great deal from him about the Universe and how to conduct research.”

Filippenko has served on the Boards of many science-education organizations, including the oldest astronomical society in the United States, the Astronomical Society of the Pacific (of which he was President in 2001–2003). These also include the Chabot Space and Science Center, Friends of Lick Observatory (of which he was President), and Wonderfest. Tucker Hiatt (Executive Director of Wonderfest), notes, “A few years after receiving our 2004 Carl Sagan Prize for Science Popularization, Alex joined the Wonderfest Board of Directors and extended his legacy of public science outreach. In particular, hundreds of additional starstruck stargazers gather for Wonderfest’s *Mt. Tamalpais Astronomy Program* whenever Alex takes the microphone and shares his insights.”

Doug Cohen, Executive Producer of the *The Universe* series on The History Channel, says that “Alex is an educator in the mold of Carl Sagan, with the rare ability to captivate both in the classroom and through the medium of television. Put him in a huge lecture hall, and he’ll work every inch of the stage to light the spark of passion for astrophysics in his students. Put him in a TV documentary, and he’ll travel to the ends of the earth in search of the perfect analogy to make an abstract concept understandable and exciting for the audience.”

Filippenko’s interest in teaching was sparked as a physics undergraduate at UC Santa Barbara in the 1970s. As a member of the College of Creative Studies there, he was twice allowed to teach a small seminar on astronomy. “This was a fantastic experience,” says Filippenko. “It showed me the joys of explaining tough concepts and seeing a student’s face light up when they finally understand.” His interest in public outreach was further nurtured while he was an undergraduate summer guide at UC’s Lick Observatory, on Mt. Hamilton above Silicon Valley, giving tours of the 36-inch Great Refractor. (Although he built his foundation of communicating science, he had no social life there, being stuck on top of a mountain with no car. His wife Noelle likes to joke, “How sad for him, how nice for me.”) Consequently, Lick became very special to him, and he has conducted both astronomical research and

public outreach there for 40 years. He became very alarmed with the threat of a severe funding cut and possible closure of Lick, prompting him to jump into action.

Dr. Sandra Faber, former Director of the UC Observatories and recipient of the National Medal of Science, writes, “Alex has been one of the absolute standout faculty on behalf of Lick Observatory. He’s brought visitors, generated public interest and support, and used the facilities intensively in imaginative ways, producing world-class science. At a crucial moment when support for Lick seemed to be waning at the upper levels of the University of California, Alex won a major monetary grant from Google that provided critical new funds and demonstrated widespread community support for Lick in the Silicon Valley. Alex definitely played a decisive role in enabling Lick’s continued thriving today.” Says Filippenko, “Lick is crucial in its role for student and postdoctoral training, long-term research projects, technology development, and public outreach and education. Very few observatories excel as much in all four areas together. I’m very happy to have made a significant contribution to its existence. But we’re not out of the woods yet; funding is tight, and we continue to seek additional donors and sponsors.”

Filippenko enjoys making a special attempt to observe total solar eclipses, both for their natural beauty and their inspiration. “One engaging way to bring the majesty of the cosmos to the public,” he says, “is through worldwide trips to observe total solar eclipses. I’ve been fortunate to view 18 of them, most recently on a cruise to Antarctica. Being able to give lectures on astronomy and help people truly immerse themselves in the eclipse experience is highly rewarding.” Alex is known for jokingly telling his many students that if they don’t attempt to go see the upcoming 2024 total solar eclipse in the USA, he will retroactively fail them. He said the same thing before the 2017 total eclipse, and many of his former students subsequently reached out to tell him how they showed up.

Says Foley, “I have learned many things from Alex, but one of the most important has nothing to do with science: always take time to enjoy the moment. I will never forget the night we were using the giant Keck telescope in Hawaii and we stepped outside to count shooting stars from a meteor shower happening that night. Or the next day, when we went down to the beach to relax after a long night and little sleep.”

Filippenko has been a faculty member at UCB since 1986, after a 2-year postdoctoral appointment on campus as a Miller Fellow for Basic Research in Science, 5 years of graduate work in astronomy at Caltech (as a Hertz Foundation Fellow), and completion of his undergraduate studies in physics at UCSB. An elected member of both the National Academy of Sciences and the American Academy of Arts & Sciences, he is one of the world’s most highly cited astrophysicists. He has conducted research at various observatories including Lick, Palomar, and Keck, as well as with the Hubble Space Telescope, and he looks forward using the recently launched James Webb Space Telescope. His scientific findings on exploding stars (supernovas), galaxies, black holes, and other astrophysical topics are documented in more than 1000 research papers and have been recognized with numerous prizes. He was the only person to have been a member of both teams that revealed the accelerating expansion of the Universe, a discovery that was honored with the 2011 Nobel Prize in Physics to the teams’ leaders, as well as the 2015 Breakthrough Prize in Fundamental Physics (supported by Sergey Brin, Priscilla Chan and Mark Zuckerberg, Yuri and Julia Milner, Anne Wojcicki, Ma Huateng, and Jack Ma) to all team members. He was honored to receive one of only two Caltech Distinguished Alumni Awards in 2017.

Alex says, “There’s some amazing moments in life that we always remember. One of mine was when I was a freshman in high school, starting to use a small telescope that my parents generously gave me for Christmas. To my great surprise and delight, the third random bright 'star' that I looked at turned out to be the stunning planet Saturn. This blew my socks off! I can still feel the goose bumps and burst of adrenaline as I rushed to show my 'discovery' to my family. If discovering something most people already know about can be so thrilling, how much better must it be to discover something truly new to humanity, and to share it with others. I knew then that I had found my passion.”

For more information, contact Alex Filippenko at afilippenko@berkeley.edu