

**REBECCA OPPENHEIMER**  
**CURATOR AND PROFESSOR**  
**DEPARTMENT OF ASTROPHYSICS**  
**AMERICAN MUSEUM OF NATURAL HISTORY**  
**79<sup>TH</sup> STREET AT CENTRAL PARK WEST**  
**NEW YORK, NY 10024-5192, USA**

<http://orcid.org/0000-0001-7130-7681>

[roppenheimer@amnh.org](mailto:roppenheimer@amnh.org)

[research.amnh.org/users/bro](https://research.amnh.org/users/bro)

## EDUCATION

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|------|--|
| 1999 | Ph.D., Astronomy, California Institute of Technology,<br>“Brown Dwarf Companions of Nearby Stars,” Advisor: S. R. Kulkarni |
| 1994 | B.A., Physics, Columbia College, Columbia University   |

## AWARDS AND HONORS

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|-----------|--|
| 2009      | Blavatnik Award for Young Scientists, New York Academy of Sciences               |
| 2003      | Carter Memorial Lecturer, Carter Observatory, Wellington, New Zealand            |
| 2002-2004 | Kalbfleisch Research Fellowship, American Museum of Natural History              |
| 2002      | National Academies of Science, Beckman Frontiers of Science, Invited Participant |
| 1999-2002 | Hubble Postdoctoral Research Fellowship  |
| 1994-1997 | National Science Foundation Graduate Research Fellowship                         |
| 1990-1994 | I. I. Rabi Science Scholar, Columbia University                                  |
| 1990      | Westinghouse Science Competition, Honorable Mention                              |
| 1989      | New York Academy of Sciences Science Writing Competition, First Place            |

## EMPLOYMENT

- |              |   |
|--------------|---|
| 2013-present | Curator, Department of Astrophysics, American Museum of Natural History           |
| 2008-2013    | Associate Curator, Department of Astrophysics, American Museum of Natural History |
| 2004-2008    | Assistant Curator, Department of Astrophysics, American Museum of Natural History |
| 2002-2004    | Research Fellow, American Museum of Natural History                               |
| 1999-2002    | Hubble Research Fellow, University of California-Berkeley, AMNH                   |
| 1994-1997    | Graduate Research Fellow, California Institute of Technology, with Kulkarni       |
| 1993-1994    | Instructor, Barnard College Physics Department, History of Physics                |
| 1993-1995    | Instructor, Columbia University Summer Program for High School Students           |
| 1993         | Summer Research Student, Nat'l Astronomy and Ionosphere Center, Arecibo, PR       |
| 1992         | Summer Research Student, Nat'l Radio Astronomy Obs., Very Large Array             |
| 1991-1994    | Research Assistant, Columbia Astrophysics Laboratory, Advisor: D. J. Helfand.     |
| 1988-1991    | Research Assistant, NASA Goddard Institute for Space Studies (GISS)               |
| 1988         | New York Academy of Sciences Summer Student: NASA GISS                            |

## MEMBERSHIPS

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| American Astronomical Society    | SPIE International Society for Optical Engineering |
| International Astronomical Union | American Astronautical Society                     |

## APPOINTMENTS AND ELECTED POSITIONS

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| Adjunct Professor of Astronomy, Columbia University, 2013-present                         |
| Adjunct Associate Professor of Astronomy, Columbia University, 2018-2013                  |
| Adjunct Assistant Professor of Astronomy, Columbia University, 2004-2008                  |
| Visiting Scientist, Institute of Astronomy, Cambridge University, 2004, 2006, 2010        |
| Secretary, Senate of the Scientific Staff, American Museum of Natural History, 2008-2010  |
| Vice Chair, Senate of the Scientific Staff, American Museum of Natural History, 2010-2012 |
| Chair, Senate of the Scientific Staff, American Museum of Natural History, 2012-2014      |

## CATEGORY I: SCIENTIFIC RESEARCH

CATEGORY	CAREER TOTAL
<b>Peer Reviewed/Refereed Publications</b>	
Journal Articles	98 (14)
Patents	3 (2)
Refereed Book Chapters	14 (7)
SPIE Papers <sup>†</sup>	35 (5)
Peer-Reviewed Grants	32 (20)
<i>Totals</i>	<i>182 (48)</i>
<b>Non-Refereed Publications</b>	
Conference Proceedings	53 (7)
Book Reviews	1 (1)
Op/Ed Pieces	4 (4)
Policy White Papers	9 (0)
Encyclopedia Articles	5 (5)
<i>Totals</i>	<i>72 (16)</i>

First author publications are indicated in parentheses.

h-factor = 45 as of May 2019 <https://scholar.google.com/citations?user=wFzL8fwAAAAJ&hl=en>

<sup>†</sup>SPIE papers are instrumentation papers. While not anonymously refereed, they are refereed by the editors of the volume (who are experts in the field) and are full, final references, sometimes widely cited, in the field of astronomical instrumentation.

Please note: prior to July 2014, publications were under the name B. R., Ben R. or Ben Oppenheimer.

## REFEREED PUBLICATIONS

### Refereed Journal Articles:

**Note:** All lists in Category I efforts are arranged with the most recent item first. In Categories II and III, the lists are with most recent item last. Please also note that in cases where many authors are listed the lists are usually but not exclusively arranged alphabetically after the lead author(s).

1. “Performance of the Gemini Planet Imager Non-Redundant Mask and spectroscopy of two close-separation binaries HR 2690 and HD 142527” by Greenbaum, A. Z., Cheetham, A., Sivaramakrishnan, A., Rantakyrö, F. T., Duchêne, G., Tuthill, P., De Rosa, R. J., Oppenheimer, R., Macintosh, B., Ammons, S. M., Bailey, V. P., Barman, T., Bulger, J., Cardwell, A., Chilcote, J., Cotten, T., Doyon, R., Fitzgerald, M. P., Follette, K. B., Gerard, B. L., Goodsell, S. J., Graham, J. R., Hibon, P., Hung, L.-W., Ingraham, P., Kalas, P., Konopacky, Q., Larkin, J. E., Maire, J., Marchis, F., Marley, M. S., Marois, C., Metchev, S., Millar-Blanchaer, M. A., Morzinski, K. M., Nielsen, E. L., Palmer, D., Patience, J., Perrin, M., Poyneer, L., Pueyo, L., Rajan, A., Rameau, J., Sadakuni, N.,

Savransky, D., Schneider, A. C., Song, I., Soummer, R., Thomas, S., Wallace, J. K., Wang, J. J., Ward-Duong, K., Wiktorowicz, S., and Wolff, S., accepted to *The Astronomical Journal*, arXiv:1904.09006 (April 2019).

2. “The Gemini Planet Imager Exoplanet Survey: Giant Planet and Brown Dwarf Demographics From 10-100 AU” by Nielsen, E. L., De Rosa, R. J., Macintosh, B., Wang, J. J., Ruffio, J.-B., Chiang, E., Marley, M. S., Saumon, D., Savransky, D., Ammons, S. M., Bailey, V. P., Barman, T., Blain, C., Bulger, J., Chilcote, J., Cotten, T., Czekala, I., Doyon, R., Duchene, G., Esposito, T. M., Fabrycky, D., Fitzgerald, M. P., Follette, K. B., Fortney, J. J., Gerard, B. L., Goodsell, S. J., Graham, J. R., Greenbaum, A. Z., Hibon, P., Hinkley, S., Hirsch, L. A., Hom, J., Hung, L.-W., Dawson, R. I., Ingraham, P., Kalas, P., Konopacky, Q., Larkin, J. E., Lee, E. J., Lin, J. W., Maire, J., Marchis, F., Marois, C., Metchev, S., Millar-Blanchaer, M. A., Morzinski, K. M., Oppenheimer, R., Palmer, D., Patience, J., Perrin, M., Poyneer, L., Pueyo, L., Rafikov, R. R., Rajan, A., Rameau, J., Rantakyro, F. T., Ren, B., Schneider, A. C., Sivaramakrishnan, A., Song, I., Soummer, R., Tallis, M., Thomas, S., Ward-Duong, K., and Wolff, S., accepted to *The Astronomical Journal*, arXiv:1904.05358 (April 2019).
3. “Multiple Spiral Arms in the Disk around Intermediate-mass Binary HD 34700A” by Monnier, J. D., Harries, T. J., Bae, J., Setterholm, B. R., Laws, A., Aarnio, A., Adams, F. C., Andrews, S., Calvet, N., Espaillat, C., Hartmann, L., Kraus, S., McClure, M., Miller, C., Oppenheimer, R., Wilner, D., and Zhu, Z., *The Astrophysical Journal*, Vol: 872, pg: 122 (February 2019).
4. “Dynamical Constraints on the HR 8799 Planets with GPI” by Wang, J. J., Graham, J. R., Dawson, R., Fabrycky, D., De Rosa, R. J., Pueyo, L., Konopacky, Q., Macintosh, B., Marois, C., Chiang, E., Ammons, S. M., Arriaga, P., Bailey, V. P., Barman, T., Bulger, J., Chilcote, J., Cotten, T., Doyon, R., Duchêne, G., Esposito, T. M., Fitzgerald, M. P., Follette, K. B., Gerard, B. L., Goodsell, S. J., Greenbaum, A. Z., Hibon, P., Hung, L.-W., Ingraham, P., Kalas, P., Larkin, J. E., Maire, J., Marchis, F., Marley, M. S., Metchev, S., Millar-Blanchaer, M. A., Nielsen, E. L., Oppenheimer, R., Palmer, D., Patience, J., Perrin, M., Poyneer, L., Rajan, A., Rameau, J., Rantakyro, F. T., Ruffio, J.-B., Savransky, D., Schneider, A. C., Sivaramakrishnan, A., Song, I., Soummer, R., Thomas, S., Wallace, J. K., Ward-Duong, K., Wiktorowicz, S., and Wolff, S., *The Astronomical Journal*, Vol: 156, pg: 192 (November 2018).
5. “A Deep Search for Planets in the Inner 15 au around Vega” by Meshkat, T., Nilsson, R., Aguilar, J., Vasisht, G., Oppenheimer, R., Su, K. Y. L., Cady, E., Lockhart, T., Matthews, C., Dekany, R., Leisenring, J., Ygouf, M., Mawet, D., Pueyo, L., and Beichman, C., *The Astronomical Journal*, Vol: 156, pg: 214 (November 2018).
6. “Direct Imaging of the HD 35841 Debris Disk: A Polarized Dust Ring from Gemini Planet Imager and an Outer Halo from HST/STIS” by Esposito, T. M., Duchêne, G., Kalas, P., Rice, M., Choquet, É., Ren, B., Perrin, M. D., Chen, C. H., Arriaga, P., Chiang, E., Nielsen, E. L., Graham, J. R., Wang, J. J., De Rosa, R. J., Follette, K. B., Ammons, S. M., Ansdell, M., Bailey, V. P., Barman, T., Sebastián Bruzzone, J., Bulger, J., Chilcote, J., Cotten, T., Doyon, R., Fitzgerald, M. P., Goodsell, S. J., Greenbaum, A. Z., Hibon, P., Hung, L.-W., Ingraham, P., Konopacky, Q., Larkin, J. E., Macintosh, B., Maire, J., Marchis, F., Marois, C., Mazoyer, J., Metchev, S., Millar-Blanchaer, M. A.,

Oppenheimer, R., Palmer, D., Patience, J., Poyneer, L., Pueyo, L., Rajan, A., Rameau, J., Rantakyrö, F. T., Ryan, D., Savransky, D., Schneider, A. C., Sivaramakrishnan, A., Song, I., Soummer, R., Thomas, S., Wallace, J. K., Ward-Duong, K., Wiktorowicz, S., and Wolff, S., *The Astronomical Journal*, Vol: 156, pg: 47 (August 2018).

7. “GPI Spectra of HR 8799 c, d, and e from 1.5 to 2.4  $\mu\text{m}$  with KLIP Forward Modeling” by Greenbaum, A. Z., Pueyo, L., Ruffio, J.-B., Wang, J. J., De Rosa, R. J., Aguilar, J., Rameau, J., Barman, T., Marois, C., Marley, M. S., Konopacky, Q., Rajan, A., Macintosh, B., Ansdell, M., Arriaga, P., Bailey, V. P., Bulger, J., Burrows, A. S., Chilcote, J., Cotten, T., Doyon, R., Duchêne, G., Fitzgerald, M. P., Follette, K. B., Gerard, B., Goodsell, S. J., Graham, J. R., Hibon, P., Hung, L.-W., Ingraham, P., Kalas, P., Larkin, J. E., Maire, J., Marchis, F., Metchev, S., Millar-Blanchaer, M. A., Nielsen, E. L., Norton, A., Oppenheimer, R., Palmer, D., Patience, J., Perrin, M. D., Poyneer, L., Rantakyrö, F. T., Savransky, D., Schneider, A. C., Sivaramakrishnan, A., Song, I., Soummer, R., Thomas, S., Wallace, J. K., Ward-Duong, K., Wiktorowicz, S., and Wolff, S., *The Astronomical Journal*, Vol: 155, pg: 226 (June 2018).
8. “Automated data processing architecture for the Gemini Planet Imager Exoplanet Survey” by Wang, Jason J., Perrin, Marshall D., Savransky, Dmitry, Arriaga, Pauline, Chilcote, Jeffrey K., De Rosa, Robert J., Millar-Blanchaer, Maxwell A., Marois, Christian, Rameau, Julien, Wolff, Schuyler G., Shapiro, Jacob, Ruffio, Jean-Baptiste, Maire, Jérôme, Marchis, Franck, Graham, James R., Macintosh, Bruce, Ammons, S. Mark, Bailey, Vanessa P., Barman, Travis S., Bruzzone, Sebastian, Bulger, Joanna, Cotten, Tara, Doyon, René, Duchêne, Gaspard, Fitzgerald, Michael P., Follette, Katherine B., Goodsell, Stephen, Greenbaum, Alexandra Z., Hibon, Pascale, Hung, Li-Wei, Ingraham, Patrick, Kalas, Paul, Konopacky, Quinn M., Larkin, James E., Marley, Mark S., Metchev, Stanimir, Nielsen, Eric L., Oppenheimer, Rebecca, Palmer, David W., Patience, Jennifer, Poyneer, Lisa A., Pueyo, Laurent, Rajan, Abhijith, Rantakyrö, Fredrik T., Schneider, Adam C., Sivaramakrishnan, Anand, Song, Inseok, Soummer, Rèmi, Thomas, Sandrine, Wallace, J. Kent, Ward-Duong, Kimberly, Wiktorowicz, Sloane J., *Journal of Astronomical Telescopes, Instruments, and Systems*, Vol. 4, id. 018002 (January 2018).
9. “Evidence That the Directly Imaged Planet HD 131399 Ab is a Background Star” by Nielsen, Eric L., De Rosa, Robert J., Rameau, Julien, Wang, Jason J., Esposito, Thomas M., Millar-Blanchaer, Maxwell A., Marois, Christian, Vigan, Arthur, Ammons, S. Mark, Artigau, Etienne, Bailey, Vanessa P., Blunt, Sarah, Bulger, Joanna, Chilcote, Jeffrey, Cotten, Tara, Doyon, René, Duchêne, Gaspard, Fabrycky, Daniel, Fitzgerald, Michael P., Follette, Katherine B., Gerard, BenjaminL., Goodsell, Stephen J., Graham, James R., Greenbaum, Alexandra Z., Hibon, Pascale, Hinkley, Sasha, Hung, Li-Wei, Ingraham, Patrick, Jensen-Clem, Rebecca, Kalas, Paul, Konopacky, Quinn, Larkin, James E., Macintosh, Bruce, Maire, Jérôme, Marchis, Franck, Metchev, Stanimir, Morzinski, Katie M., Murray-Clay, Ruth A., Oppenheimer, Rebecca, Palmer, David, Patience, Jennifer, Perrin, Marshall, Poyneer, Lisa, Pueyo, Laurent, Rafikov, Roman R., Rajan, Abhijith, Rantakyrö, Fredrik T., Ruffio, Jean-Baptiste, Savransky, Dmitry, Schneider, Adam C., Sivaramakrishnan, Anand, Song, Inseok, Soummer, Rèmi, Thomas, Sandrine, Wallace, J. Kent, Ward-Duong, Kimberly, Wiktorowicz, Sloane, Wolff, Schuyler, *The Astronomical Journal*, Vol. 154, id. 218, 26 pp. (December 2017).

10. "Project 1640 observations of the white dwarf HD 114174 B" by Bacchus, E., Parry, I. R., Oppenheimer, R., Aguilar, J., Beichman, C., Brenner, D., Burruss, R., Cady, E., Luszcz-Cook, S., Crepp, J., Dekany, R., Gianninas, A., Hillenbrand, L., Kilic, M., King, D., Lockhart, T. G., Matthews, C. T., Nilsson, R., Pueyo, L., Rice, E. L., Roberts, L. C., Sivaramakrishnan, A., Soummer, R., Vasisht, G., Veicht, A., Zhai, C., Zimmerman, N. T., *Monthly Notices of the Royal Astronomical Society*, Vol. 469, pp. 4796-4805 (August 2017).
11. "Direct Imaging of Exoplanets with Project 1640" by Lewis, Briley, L. and Oppenheimer, Rebecca, *Columbia Undergraduate Science Journal*, Vol. 11, pp. 11-19 (July 2017).
12. "Characterizing 51 Eri b from 1 to 5  $\mu\text{m}$ : A Partly Cloudy Exoplanet" by Rajan, Abhijith, Rameau, Julien, De Rosa, Robert J., Marley, Mark S., Graham, James R., Macintosh, Bruce, Marois, Christian, Morley, Caroline, Patience, Jennifer, Pueyo, Laurent, Saumon, Didier, Ward-Duong, Kimberly, Ammons, S. Mark, Arriaga, Pauline, Bailey, Vanessa P., Barman, Travis, Bulger, Joanna, Burrows, Adam S., Chilcote, Jeffrey, Cotten, Tara, Czekala, Ian, Doyon, Rene, Duchêne, Gaspard, Esposito, Thomas M., Fitzgerald, Michael P., Follette, Katherine B., Fortney, Jonathan J., Goodsell, Stephen J., Greenbaum, Alexandra Z., Hibon, Pascale, Hung, Li-Wei, Ingraham, Patrick, Johnson-Groh, Mara, Kalas, Paul, Konopacky, Quinn, Lafrenière, David, Larkin, James E., Maire, Jérôme, Marchis, Franck, Metchev, Stanimir, Millar-Blanchaer, Maxwell A., Morzinski, Katie M., Nielsen, Eric L., Oppenheimer, Rebecca, Palmer, David, Patel, Rahul I., Perrin, Marshall, Poyneer, Lisa, Rantakyrö, Fredrik T., Ruffio, Jean-Baptiste, Savransky, Dmitry, Schneider, Adam C., Sivaramakrishnan, Anand, Song, Inseok, Soummer, Rèmi, Thomas, Sandrine, Vasisht, Gautam, Wallace, J. Kent, Wang, Jason J., Wiktorowicz, Sloane, Wolff, Schuyler, *The Astronomical Journal*, Vol. 154, id. 10, 20 pp. (July 2017).
13. "Improving and Assessing Planet Sensitivity of the GPI Exoplanet Survey with a Forward Model Matched Filter" by Ruffio, Jean-Baptiste, Macintosh, Bruce, Wang, Jason J., Pueyo, Laurent, Nielsen, Eric L., De Rosa, Robert J., Czekala, Ian, Marley, Mark S., Arriaga, Pauline, Bailey, Vanessa P., Barman, Travis, Bulger, Joanna, Chilcote, Jeffrey, Cotten, Tara, Doyon, Rene, Duchêne, Gaspard, Fitzgerald, Michael P., Follette, Katherine B., Gerard, Benjamin L., Goodsell, Stephen J., Graham, James R., Greenbaum, Alexandra Z., Hibon, Pascale, Hung, Li-Wei, Ingraham, Patrick, Kalas, Paul, Konopacky, Quinn, Larkin, James E., Maire, Jérôme, Marchis, Franck, Marois, Christian, Metchev, Stanimir, Millar-Blanchaer, Maxwell A., Morzinski, Katie M., Oppenheimer, Rebecca, Palmer, David, Patience, Jennifer, Perrin, Marshall, Poyneer, Lisa, Rajan, Abhijith, Rameau, Julien, Rantakyrö, Fredrik T., Savransky, Dmitry, Schneider, Adam C., Sivaramakrishnan, Anand, Song, Inseok, Soummer, Rèmi, Thomas, Sandrine, Wallace, J. Kent, Ward-Duong, Kimberly, Wiktorowicz, Sloane, Wolff, Schuyler, *The Astrophysical Journal*, Vol. 842, id. 14, 22 pp. (June 2017).
14. "Complex Spiral Structure in the HD 100546 Transitional Disk as Revealed by GPI and MagAO" by Follette, Katherine B., Rameau, Julien, Dong, Ruobing, Pueyo, Laurent, Close, Laird M., Duchêne, Gaspard, Fung, Jeffrey, Leonard, Clare, Macintosh, Bruce, Males, Jared R., Marois, Christian, Millar-Blanchaer, Maxwell A., Morzinski, Katie M., Mullen, Wyatt, Perrin, Marshall, Spiro, Elijah, Wang, Jason, Ammons, S. Mark, Bailey, Vanessa P., Barman, Travis, Bulger, Joanna, Chilcote, Jeffrey, Cotten, Tara, De Rosa,

Robert J., Doyon, Rene, Fitzgerald, Michael P., Goodsell, Stephen J., Graham, James R., Greenbaum, Alexandra Z., Hibon, Pascale, Hung, Li-Wei, Ingraham, Patrick, Kalas, Paul, Konopacky, Quinn, Larkin, James E., Maire, Jérôme, Marchis, Franck, Metchev, Stanimir, Nielsen, Eric L., Oppenheimer, Rebecca, Palmer, David, Patience, Jennifer, Poyneer, Lisa, Rajan, Abhijith, Rantakyrö, Fredrik T., Savransky, Dmitry, Schneider, Adam C., Sivaramakrishnan, Anand, Song, Inseok, Soummer, Rèmi, Thomas, Sandrine, Vega, David, Wallace, J. Kent, Ward-Duong, Kimberly, Wiktorowicz, Sloane, Wolff, Schuyler, *The Astronomical Journal*, Vol. 153, id. 264, 15 pp. (June 2017).

15. “An Optical/Near-infrared Investigation of HD 100546 b with the Gemini Planet Imager and MagAO” Rameau, Julien, Follette, Katherine B., Pueyo, Laurent, Marois, Christian, Macintosh, Bruce, Millar-Blanchaer, Maxwell, Wang, Jason J., Vega, David, Doyon, René, Lafrenière, David, Nielsen, Eric L., Bailey, Vanessa, Chilcote, Jeffrey K., Close, Laird M., Esposito, Thomas M., Males, Jared R., Metchev, Stanimir, Morzinski, Katie M., Ruffio, Jean-Baptiste, Wolff, Schuyler G., Ammons, S. M., Barman, Travis S., Bulger, Joanna, Cotten, Tara, De Rosa, Robert J., Duchêne, Gaspard, Fitzgerald, Michael P., Goodsell, Stephen, Graham, James R., Greenbaum, Alexandra Z., Hibon, Pascale, Hung, Li-Wei, Ingraham, Patrick, Kalas, Paul, Konopacky, Quinn, Larkin, James E., Maire, Jérôme, Marchis, Franck, Oppenheimer, Rebecca, Palmer, David, Patience, Jennifer, Perrin, Marshall D., Poyneer, Lisa, Rajan, Abhijith, Rantakyrö, Fredrik T., Marley, Mark S., Savransky, Dmitry, Schneider, Adam C., Sivaramakrishnan, Anand, Song, Inseok, Soummer, Rèmi, Thomas, Sandrine, Wallace, J. Kent, Ward-Duong, Kimberly, Wiktorowicz, Sloane, *The Astronomical Journal*, Vol. 153, pp. 244-252 (June 2017). “An Optical/near-infrared investigation of HD 100546 b with the Gemini Planet Imager and MagAO,” Rameau, Julien, Follette, Katherine B., Pueyo, Laurent, Marois, Christian, Macintosh, Bruce, Millar-Blanchaer, Maxwell, Wang, Jason J., Vega, David, Doyon, Rene, Lafreniere, David, Nielsen, Eric L., Bailey, Vanessa, Chilcote, Jeffrey K., Close, Laird M., Esposito, Thomas M., Males, Jared R., Metchev, Stanimir, Morzinski, Katie M., Ruffio, Jean-Baptiste, Wolff, Schuyler G., Ammons, S. M., Barman, Travis S., Bulger, Joanna, Cotten, Tara, De Rosa, Robert J., Duchene, Gaspard, Fitzgerald, Michael P., Goodsell, Stephen, Graham, James R., Greenbaum, Alexandra Z., Hibon, Pascale, Hung, Li-Wei, Ingraham, Patrick, Kalas, Paul, Konopacky, Quinn, Larkin, James E., Maire, Jerome, Marchis, Franck, Marley, Mark S., Oppenheimer, Rebecca, Palmer, David, Patience, Jennifer, Perrin, Marshall D., Poyneer, Lisa, Rajan, Abhijith, Rantakyro, Fredrik T., Savransky, Dmitry, Schneider, Adam C., Sivaramakrishnan, Anand, Song, Inseok, Soummer, Remi, Thomas, Sandrine, Wallace, J. Kent, Ward-Duong, Kimberly, Wiktorowicz, Sloane, *The Astronomical Journal*, Vol. 153, id. 244, 9 pp. (June 2017).
16. “Integral Field Spectroscopy of the Low-mass Companion HD 984 B with the Gemini Planet Imager” by Johnson-Groh, Mara, Marois, Christian, De Rosa, Robert J., Nielsen, Eric L., Rameau, Julien, Blunt, Sarah, Vargas, Jeffrey, Ammons, S. Mark, Bailey, Vanessa P., Barman, Travis S., Bulger, Joanna, Chilcote, Jeffrey K., Cotten, Tara, Doyon, René, Duchêne, Gaspard, Fitzgerald, Michael P., Follette, Kate B., Goodsell, Stephen, Graham, James R., Greenbaum, Alexandra Z., Hibon, Pascale, Hung, Li-Wei, Ingraham, Patrick, Kalas, Paul, Konopacky, Quinn M., Larkin, James E., Macintosh, Bruce, Maire, Jérôme, Marchis, Franck, Marley, Mark S., Metchev, Stanimir, Millar-Blanchaer, Maxwell A., Oppenheimer, Rebecca, Palmer, David W., Patience, Jenny, Perrin, Marshall, Poyneer, Lisa A., Pueyo, Laurent, Rajan, Abhijith, Rantakyrö, Fredrik

- T., Savransky, Dmitry, Schneider, Adam C., Sivaramakrishnan, Anand, Song, Inseok, Soummer, Remi, Thomas, Sandrine, Vega, David, Wallace, J. Kent, Wang, Jason J., Ward-Duong, Kimberly, Wiktorowicz, Sloane J., Wolff, Schuyler G., *The Astronomical Journal*, Vol. 153, id. 190, 13 pp. (April 2017).
17. “1-2.4 μm Near-IR Spectrum of the Giant Planet beta Pictoris b Obtained with the Gemini Planet Imager” by Chilcote, Jeffrey, Pueyo, Laurent, De Rosa, Robert J., Vargas, Jeffrey, Macintosh, Bruce, Bailey, Vanessa P., Barman, Travis, Bauman, Brian, Bruzzone, Sebastian, Bulger, Joanna, Burrows, Adam S., Cardwell, Andrew, Chen, Christine H., Cotten, Tara, Dillon, Daren, Doyon, Rene, Draper, Zachary H., Duchêne, Gaspard, Dunn, Jennifer, Erikson, Darren, Fitzgerald, Michael P., Follette, Katherine B., Gavel, Donald, Goodsell, Stephen J., Graham, James R., Greenbaum, Alexandra Z., Hartung, Markus, Hibon, Pascale, Hung, Li-Wei, Ingraham, Patrick, Kalas, Paul, Konopacky, Quinn, Larkin, James E., Maire, Jérôme, Marchis, Franck, Marley, Mark S., Marois, Christian, Metchev, Stanimir, Millar-Blanchaer, Maxwell A., Morzinski, Katie M., Nielsen, Eric L., Norton, Andrew, Oppenheimer, Rebecca, Palmer, David, Patience, Jennifer, Perrin, Marshall, Poyneer, Lisa, Rajan, Abhijith, Rameau, Julien, Rantakyrö, Fredrik T., Sadakuni, Naru, Saddlemeyer, Leslie, Savransky, Dmitry, Schneider, Adam C., Serio, Andrew, Sivaramakrishnan, Anand, Song, Inseok, Soummer, Remi, Thomas, Sandrine, Wallace, J. Kent, Wang, Jason J., Ward-Duong, Kimberly, Wiktorowicz, Sloane, Wolff, Schuyler, *The Astronomical Journal*, Vol. 153, id. 182, 15 pp. (April 2017).
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## Patents

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2. “Astrometry and Photometry with Coronagraphs” by Anand Sivaramakrishnan and B. R. Oppenheimer, Inventors; American Museum of Natural History, Assignee, United States

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**PEER-REVIEWED GRANTS****Total Awarded: \$11,701,293**

<b>YEAR</b>	<b>TOTAL AWARDED DURING THE YEAR</b>
FY19:	\$781,959
FY18:	\$47,358
FY17:	\$78,800
FY16:	\$213,795
FY15:	\$72,159
FY14	\$0
FY13:	\$1,176,307
FY12:	\$0
FY11:	\$769,422
FY10:	\$1,265,109
FY09:	\$502,076
FY08:	\$1,600,088
FY07:	\$3,475,668 <sup>†</sup>
FY06:	\$374,997
FY05 & earlier:	\$1,292,669
Committee support (FY14-17)	\$50,886

<sup>†</sup>In FY07, an award of \$1,216,861 (not included in the numbers above) was granted, but the NASA program funding it was later cancelled. Success rate on grant proposals has been roughly 79% to date. The listing below has the latest awards last. Some are sub-awards on much larger projects, such as the Gemini Planet Imager which was a \$26M effort prior to commissioning of the instrument in Chile.

**Awarded Grants:**

	<b>Funding Agency</b>	<b>Program</b>	<b>Title</b>	<b>Dates</b>	<b>PI(s)</b>	<b>Award Amount</b>	<b>Purpose</b>
1	NSF	Major Research Instrumentation	Coronagraph for the AEOS Telescope: Imaging Exoplanets and Brown Dwarfs	08/01/02-07/31/06	Oppenheimer	\$524,120	Initial construction of Lyot Project coronagraph
2	NSF & Air Force Office of Scientific Research	Advanced Technologies and Instrumentation	The Lyot Project	9/15/03-8/31/06	Oppenheimer	\$304,726	Increase coronagraph sensitivity and fund science operations
3	NASA Michelson Science Center	Michelson Postdoctoral Fellowship	The Lyot Project	09/10/03-09/09/06	Oppenheimer	\$405,448	Prize Fellowship for Dr. A. P. Digby
4	NASA	Terrestrial Planet Finder Foundation Science	The Lyot Project: Survey of Nearby Stars for Circumstellar Disks and Exoplanets	06/01/05-05/31/08	Oppenheimer	\$374,994	Support observing survey with coronagraph
5	NSF	Major Research Instrumentation	Integral Field Spectroscopy for Exoplanetary Science with the Lyot Project	08/01/05-07/31/08	Oppenheimer	\$1,332,702	Construction of new hyperspectral imaging camera for coronagraph
6	NASA Michelson Center	Michelson Postdoctoral Fellowship	Advanced Coronagraphy	10/01/05-09/30/06	Oppenheimer & Sivaramakrishnan	\$105,914	Prize Fellowship for Dr. R. Soummer

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	<b>Funding Agency</b>	<b>Program</b>	<b>Title</b>	<b>Dates</b>	<b>PI(s)</b>	<b>Award Amount</b>	<b>Purpose</b>
7	NASA Michelson Science Center	Michelson Education and Outreach	The Instruments of Exoplanetary Science: a new Temporary Exhibition at AMNH	10/01/05-08/30/07	Oppenheimer	\$129,902	Funded "Looking for Other Worlds" Exhibition
8	NSF	Center For Adaptive Optics	Advancing Extreme AO Coronagraphy	02/01/06-09/30/06	Sivaramakrishnan	\$100,000	Support for coronagraph theory development
9	NSF	Advanced Technologies and Instrumentation Special Competition for AEOS Observations	NSF/AFOSR Astronomy: The Lyot Project Survey for Exoplanets, Brown Dwarfs and Circumstellar Disks	05/01/06-04/30/09	Oppenheimer and Sivaramakrishnan	\$202,497	Additional observing time and travel support for observations at the USAF AEOS telescope
10	NSF/AURA	International Gemini Observatory Instrumentation	Extreme Adaptive Optics Coronagraph	08/01/06-12/31/13	Oppenheimer	\$1,403,965	7 institution consortium to build Gemini Planet Imager; Total project funding: \$18,159,707
11	NSF	Center For Adaptive Optics	Advancing Extreme AO Coronagraphy	11/01/06-10/31/07	Sivaramakrishnan	\$100,688	Support for coronagraph theory development
12	NASA	Unsolicited	The Stars: A Digital Space Show	12/1/07-11/30/08	Kinzler	\$1,500,000	Initial funding for the fourth space show
13	NSF	Center For Adaptive Optics	Advancing Extreme AO Coronagraphy	11/01/07-10/31/08	Sivaramakrishnan	\$35,000	Support for coronagraph theory development
14	NSF	ATI	Non-Redundant Mask Interferometric Techniques for Extreme Adaptive Optics Integral Field Spectroscopy	7/15/08-6/30/11	Sivaramakrishnan and Oppenheimer	\$405,572	New experiments with deployed Project 1640 Coronagraph
15	NSF	MRI	Supplement to Award 5	7/31/08-5/31/10	Oppenheimer	\$96,504	Equipment upgrades and repairs
16	NSF	AAG	Project 1640	7/1/09-6/30/13	Oppenheimer	\$402,607	Scientific Survey at Palomar
17	NASA	APRA	Planetary System, star formation and black hole science with non-redundant masking on space telescopes	1/6/10-1/5/13	Sivaramakrishnan	\$702,362	Theoretical and laboratory-based investigations of high-contrast observations from space
18	NASA/JPL	ADP	Data Processing Methods for Direct Imaging of Exoplanets with the Palomar Project 1640	7/1/10-9/30/12	Oppenheimer and Vasishth	\$111,559	Speckle Suppression Analysis
19	NSF	Major Research Instrumentation	Development of Project 1640: Direct Exoplanet Spectroscopy	10/1/10-9/30/12	Oppenheimer	\$657,863	P1640 Sensitivity upgrades and new detector

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	Funding Agency	Program	Title	Dates	PI(s)	Award Amount	Purpose
22	NSF	EAGER	Bringing Computer Vision to Exoplanet Detection	7/1/12-6/30/13	Oppenheimer	\$165,136	Novel techniques in Speckle Suppression using Computer Vision
21	NASA	Origins	Project 1640 Phase II Science Survey	4/1/13-3/31/16	Oppenheimer	\$1,011,171	Observations and analysis for Project 1640
22	NASA	APRA	Electric Field Conjugation with Project 1640	1/11/2016 – 1/10/2018	Vasisht and Oppenheimer	\$72,159	Development of half-plane dark hole for exoplanet detection and spectroscopy
23	STScI	Observations	Longitude-resolved maps of Uranus's radio emission	9/1/2015 – 8/31/2018	Cook and Oppenheimer	\$11,907	Detailed mapping of bright cloud features on Uranus
24	STScI	Observations	Longitude-resolved maps of Neptune's radio emission	11/1/2015 – 10/31/2018	Cook and Oppenheimer	\$11,907	Detailed mapping of bright cloud features on Neptune
25	NASA	Solar System Observations (SSO)	A Multi-Frequency Campaign to Probe Uranus's Dynamics and Deep Atmospheric Structure	7/1/2016 – 6/30/2019	Cook and Oppenheimer	\$95,367	Using Keck, Alma, HST and other data, as well as new models to uncover the structure of Uranus's atmosphere
26	NSF	AST/MPS	Collaborative Research: A Multi-Frequency Campaign to Probe Neptune's Dynamics and Deep Atmospheric Structure	9/1/2016 – 8/31/2019	Cook and Oppenheimer	\$94,614	Using Keck, Alma, HST and other data, as well as new models to uncover the structure of Neptune's atmosphere
27	Mt. Cuba Foundation	Astronomical Instrumentation	The Population of Planets Around the Most Common Stars: Guide Camera for the Palomar Radial Velocity Instrument (PARVI)	6/1/2017-5/30/2018	Oppenheimer	\$78,800	Funds to design and build a superior guide camera for the successor instrument to Project 1640
28	NASA	JPS ExEP ExoTAC	WFIRST/ExoTAC/S5 external advisory committee	10/1/2017-9/30/2020	Oppenheimer	\$47,358	Advisory committee activities
29	NSF	Center Research Infrastructure	CC* Networking Infrastructure: High Performance Research Data Infrastructure at the American Museum of Natural History	7/1/2018 - 8/31/2019	Oppenheimer, Montes and Benedetto	\$499,722	Upgrade internal and external AMNH-wide network infrastructure and reconnect the museum to Internet 2 via NYSERNET
30	NASA	Spitzer Mission Guest Observer via JPL GO13 – PID 14131	Ultra-cool dwarfs viewed equator-on: surveying the best host stars for biosignature	5/1/2019 - 9/30/2021	Oppenheimer, Faherty, Metchev	\$50,000	Observation data analysis from Spitzer Space Telescope data

Funding Agency	Program	Title	Dates	PI(s)	Award Amount	Purpose
		detection in transiting exoplanets				
31	NASA	Astrophysics Data Analysis Program, 18-ADAP18-0179	Binaries or Variables? Disentangling the Signatures of Blended-Light Atmospheres	2/25/2019 - 2/24/2021 Bardalez-Gagliuffi, Faherty, Oppenheimer	\$207,237	Investigation of extremely close binary systems for extreme mass ratios
32	NASA	JPL-PARVI	Parvi: Small planets around small stars	5/1/2019-9/30/2019 Oppenheimer	\$25,000	Funds for commissioning new instrument at Palomar

**STUDENTS, POSTDOCTORAL SCHOLARS AND SCIENTIFIC ASSOCIATES ADVISED**Undergraduate:

Laura Newburgh (Barnard, now Postdoc, Dunlap Institute, U. of Toronto)  
 Kaitlin Kratter (Barnard, now Faculty, Steward Observatory, U. of Arizona)  
 Jeremy Leconte (ENS, France, Kade Fellow at AMNH, now Postdoc, Ca. Inst. For Theoretical Astrophysics, U. of Toronto)  
 Stefanie Fiorenza (AMNH REU program)  
 Andrew Brown (AMNH)  
 Bence Beky (Tampere University of Technology, Finland)  
 Robin Roberts (CUNY)  
 Crystal Latham (FIT)  
 Jennifer Moses (Franklin and Marshall College)  
 Dax Feliz (UMass-Amherst)  
 Erica Rosenblum (UCSC, now at Scripps, NSF Graduate Research Fellowship)  
 Louis Wilson (Washington U.)  
 Sean Boylan (U. Rochester)  
 Briley Lynn Lewis (Columbia U., REU, senior thesis, now at UCLA, NSF Graduate Research Fellowship)

Post-Baccalaureate:

Emily Carlson (AMNH) plus 9 high-school Brown Scholars

Graduate:

Catherine Clark (NAU, Ph.D., secondary advisor)  
 Rose Gibson (Columbia, Ph.D., primary advisor)  
 AAron Veicht (Columbia, Ph.D., primary advisor)  
 Sasha Hinkley (Columbia, Ph.D., primary advisor, now faculty Exeter, UK)  
 Neil Zimmerman (Columbia, Ph.D., primary advisor, now Senior Scientist, NASA/Goddard)  
 Laurent Pueyo (Princeton University, Ph.D., dual advisor, now faculty STScI)  
 Andrew Brown (Columbia M.A., primary advisor)  
 Destry Saul (Columbia, Ph.D., secondary advisor)  
 Sarah Tuttle (Columbia, Ph.D., secondary advisory)  
 Rahul Patel (SUNY-Stony Brook, Ph.D., secondary advisor)

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Alexis Carlotti (University of Nice, Ph.D., secondary advisor)  
Stephanie Hunt (Cambridge University, Ph.D., secondary advisor)  
Victor Garcia (Vanderbilt, Ph.D., secondary advisor)

Post-Doctoral:

Daniella Bardalez-Gagliuffi (AMNH, Kalbfleisch Fellow)  
AAron Veicht (AMNH, 2016-17, grants, now partner at startup)  
Statia Cook (AMNH, Kalbfleisch Fellow, Now at Columbia U.)  
Ricky Nilsson (AMNH, now on Swedish National Research Foundation Fellowship at AMNH)  
Remi Soummer (AMNH Kalbfleisch Fellow, NASA Sagan Fellow, now Faculty, STScI)  
Emily Rice (AMNH, now Faculty, CUNY-Staten Island)  
Laurent Pueyo (AMNH, now Faculty, STScI)  
Justin Crepp (Caltech, now Faculty, Notre Dame U.)  
Andrew Digby (AMNH, NASA Michelson Fellow)

Scientific Associates:

Douglas Brenner (AMNH Senior Research Scientist)  
Anand Sivaramakrishnan (AMNH, now Staff Scientist, STScI)

## CATEGORY II: SERVICE TO THE MUSEUM

### **Administrative Positions:**

1. Curator-in-Charge of Astrophysics, July 2012-January 2019
2. Chair of the Scientific Senate, September 2012-August 2014
3. Vice Chair of the Scientific Senate, September 2010-August 2012
4. Secretary of the Scientific Senate, September 2008-August 2010
5. Stand-in Secretary of the Scientific Senate, January 2008, February 2008
6. Curator-in-Charge of Digital Universe, January 2006-present
7. Curator-in-Charge of AstroBulletins, October 2005-2017

### **AMNH Committees:**

1. Advisory Committee on Campus Security: September 2014-present
2. Curator Search Committee Astrophysics, 2017-2018
3. Academic Affairs and Fellowships Committee: September 2016-August 2018
4. Diversity, Development and Equity Committee: September 2016-present
5. Academic Affairs and Fellowships Committee: September 2014-August 2016
6. Appointments and Promotions Committee: September 2010-August 2012
7. Senate Executive Committee, September 2008-August 2014
8. Microscopy and Imaging Facility, Sept. 2004-August 2008
9. Education Committee, September 2006-August 2008
10. Library Committee, December 2007-August 2008
11. Academic Affairs and Fellowships Committee, September 2007-August 2012
12. Invertebrate Zoology Curatorial Search Committee, September 2007-June 2008
13. Curriculum Committee for Graduate School, January 2005, 1 year
14. Student Life Committee for Graduate School, January 2005, 1 year

### **Exhibitions:**

1. “Looking for Other Worlds,” temporary exhibition in the Hall of the Universe, March 13, 2007-March 12, 2008, with one permanent addition to the Hall, a set of public programs, a website, and off-site participation by NASA and the Mt. Wilson Observatory.
2. Co-Curator, with Mac Low, Space Show IV: “Journey to The Stars,” July 2010 opening.
3. Co-Curator (with M. Brauen) part of “Visions of the Cosmos,” Rubin Museum of Art, December 11, 2009-May 10, 2010.
4. “The Known Universe,” curator of film production, launched on YouTube and available for download December 15, 2009. Over 13 million people have viewed it.
5. Various updates and improvements in the Rose Center, FY 2018-present.

### **AMNH public education:**

1. Hayden Planetarium, “This Just In . . .” April 20, 2004.
2. AMNH Junior Council Lecture, April 8, 2004.
3. AMNH Summer High School Research Program, August 2, 2004 .
4. AMNH Rose Center High School Program, August 9, 2004.
5. Summer Institute on Learning and Teaching Earth Science at AMNH, Teacher Renewal for Urban Science Teaching (TRUST), July 2005.
6. Hayden Planetarium, “Searching for other Earths,” September 14, 2005.

7. AMNH Saltz Summer Internship Program, August 7, 2006.
8. Astrophysics laboratory tour for Summer Science Institute, Department of Education, June 30, 2006.
9. Summer Institute on Learning and Teaching Earth Science at AMNH, Teacher Renewal for Urban Science Teaching (TRUST), July 2006, several lectures and assistance with the program.
10. Host for “Death by Black Hole” Lecture by Neil Tyson, February 13, 2007.
11. “The Search for Life on Other Worlds,” Hayden Planetarium special program at the opening of “Looking for Other Worlds” exhibition, March 13, 2007.
12. Explainers Talk on Exoplanets and AMNH research in this area, May 4, 2007.
- 13.-24. Host for 11 Planetarium evening lectures, June 2005-2011.
25. Hayden Planetarium, “International Year of Astronomy 2009: The Journey to Palomar,” January 15, 2009.
26. Frontiers of Science Columbia Undergraduates, tour of lab and lecture, April 17, 2009.
27. Columbia Alumni Association, lecture and space show discussion, June 4, 2010.
28. Inaugural SciCafe event, lecture and discussion, October 7, 2009.
29. 10<sup>th</sup> Anniversary Rose Center, Presentation with NASA Astronaut Michael Massimino, October 10, 2010.
30. Video interview for new AMNH website, November 2, 2010
31. Host for Brampton Lecture Series with Columbia University-Hayden Planetarium, April 5, 2011
32. Video Interview for Space Exploration exhibit, June 7, 2011
33. Host for Dimitar Sasselov, Hayden Planetarium, February 6, 2012
34. Host for Caleb Scharf, Hayden Planetarium, September 10, 2012
35. Host for Geoff Marcy, Hayden Planetarium, March 11, 2013
36. AMNH SciCafe Lecturer, February 5, 2014
37. Video interview for “Star Talk” with Neil Tyson, Emily Rice and Maeve Higgens, November 24, 2015.
38. Host for Elizabeth Tasker, Hayden Planetarium, February 5, 2018
39. Amateur Astronomers Association Lecture, Kaufman, “Planets Don’t Exist,” December 4, 2018
40. Host for Amy Mainzer, Hayden Program (Kaufman), March 11, 2019
41. Hayden Public program, “Degenerates of the Universe,” June 3, 2019

#### **Tours, Meetings and Events for VIPs or Donors:**

1. General Atlantic, Steve Denning’s group (Trustee), Lab Tour, October 19, 2005.
2. NASA TPF Program Scientists, Museum Host and Lab Tour, September 13, 2005.
3. Patron’s Circle Luncheon, Table Host, November 3, 2005.
4. Bill Golden/Carnegie Meeting, Lab Tour, December 3, 2005.
5. Board of Trustees Meeting, Science Presenter, December 7, 2005.
6. CIT officials, Lab Tour, March 3, 2006.
7. “Cosmic Collisions” Space Show Opening, with Astrophysics Laboratory tour for journalists via Communications Department, March 15, 2006.
8. Evan Dick, March 23, 2006.
9. Patron’s Circle Science-at-Work Luncheon, March 30, 2006.
10. Eldrin Cruz, NASA JPL Officer, April 14, 2006.

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11. CIT Women's Advisory Council, Behind-the-Scenes Tour and Luncheon, May 25, 2006.
12. Dick Mark, June 13, 2006.
13. Major Donors Dinner, June 26, 2006.
14. CIT Family Night at the Museum, June 29, 2006.
15. Junior Council Event, July 11, 2006.
16. Patron's Circle Luncheon, table host, November 1, 2006.
17. Board of Trustees Science Policy Committee presentation, November 9, 2006.
18. Tour and reception for Mayor Michael Bloomberg, Deputy Mayor Patricia Harris, December 28, 2006.
19. Lab tour for Junior Council members, January 25, 2007.
20. Junior Council CBC Program, January 18, 2007.
21. "Looking for Other Worlds" temporary exhibition opening reception, March 14, 2007.
22. Tour for Richard Fisher and Madhulika Guhathakurta, NASA Headquarters representatives, March 14, 2007.
23. Daniel Kirk-Foster, St. Wilfrid's Club, lab tour, October 1, 2006.
24. Annual Environmental Luncheon, Janet Asimov and Hilary Lipsitz, April 25, 2007.
25. Ellen Boer, August 2, 2007.
26. Hilary Lipsitz, September 11, 2007.
27. Patron's Circle Luncheon, Water, October 24, 2007.
28. UNESCO/AMNH Expeditions World Heritage event, September 24, 2007.
29. Institute for Advanced Studies and Carnegie Institutions of Washington Joint Commission on Science and Math Education, tour of Rose Center, November 7, 2007.
30. Tom Secunda (CTO Bloomberg), Saturday, November 10, 2007.
31. Annette Kade Charitable Foundation, review of Kade Fellowships, November 20, 2007.
32. Lab tour for Ambassador Sichan Siv, November 30, 2007.
33. Rose Center tour for the family of the Secretary General of the United Nations, Ban Ki-Moon, December 28, 2007.
34. Museum Advisory Council, Host, January 17, 2008.
35. 15<sup>th</sup> Anniversary of founding of Patron's Circle, February 5, 2008.
36. Steven Koval and Celeste Sant'Angelo, plus son Luca, Tour, March 18, 2008.
37. Guest Lecturer at for the 7<sup>th</sup> Annual Chairman's Circle Dinner, June 4, 2008.
38. Lab Tour for Marshall Levine, September 11, 2008.
39. Hilary and Ethel Lipsitz, November 20, 2008.
40. Eric Zinterhofer and Aerin Lauder, December 4, 2008.
41. Henry Arnhold, July 29, 2009.
42. Daniel Silverman, June 15, 2010.
43. Jeff Tarr, June 15, 2010.
44. Ponz Family, October 21, 2011.
45. Thoren Family, February 2, 2011.
46. Beyond Planet Earth Event, February 7, 2011.
47. Exhibitions reception, February 9, 2011.
48. Roger Altman Dome and Dinner event, June 6, 2013
49. Roger Altman Dome and Dinner event, January 16, 2013
50. Science at Work, March 13, 2013
51. Henry Arnhold, Lab visit and lunch with Pres. Futter, January 28, 2014
52. Jake Gyllenhaal, Ruth Wilson and Michael Longhurst, November 21, 2014

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53. Sarah-Kate Ellis, Jennifer Finney Boylan, Laura Erikson-Schroth, tour and discussion, November 30, 2015 (President/CEO and board members of GLAAD).
54. Chairman's Circle Dinner (various trustees), May 1, 2017.

**Meetings Hosted and Organized at AMNH:**

1. NASA Terrestrial Planet Finder-Interferometer and Coronagraph Meetings at AMNH September 13-16, 2005, entire mission staff and science advisory boards (of which I was a member) had one of its six meetings at AMNH.
2. Center for High Angular Resolution Astronomy, Annual Science Meeting, March 15 and 16, 2007.
3. Space Show IV Science Colloquium, February 7 and 8, 2008.
4. Gemini Planet Imager Science Team, May 23-25, 2010.
5. Harassment in Astrophysics, led by Dr. Christina Richey (NASA HQ), March 4, 2016.
6. LGBT workplace climate, led by Dr. Elena Long (UNH/APS), May 20, 2016.
7. General Relativity 21, Co-sponsor with Columbia U., Conference Banquet, July 13, 2016.
8. Lia Halloran, Artist-in-Residence, March 2017-2018, museum-wide talk April 6, 2017.

**Other Activities:**

1. Designed and guided construction of Rose Center 6<sup>th</sup> floor offices and the Astrophysics Laboratory, Steven Warsavage (Construction Department) Project Manager, November 2004-May 2005.
2. Assisted with Communications and Marketing requests to check scientific accuracy, various dates.
3. AMNH Expeditions (Discovery Tour) aboard MV Hanseatic, to Norway, Spitsbergen, Arctic Ice Sheet, Russian White Sea, June 30-July 20, 2007, group leader and lecturer.
4. Assisted with American Association of Museums accreditation process, April 24, 2008.
5. Project 1640, project-wide meeting, Las Vegas, January 28-30, 2010.
6. AMNH.org video interview for new website, November 2, 2010.
7. Project 1640, project-wide meeting, Atlantic City, December 2-3, 2010.
8. Project 1640, project-wide meeting, Rincon, CA, March 25-26, 2012.
9. Upgrades to Perkin Library, May 2017-May 2018.

**Served as an expert and was interviewed for the following press articles or other media, which either covered my own research or related work (Communications Department):**

1. *Research Highlights*: Maj. Paul Belaire, Air Force Office of Scientific Research, "Coronagraph Used in Exoplanet Hunting," Jan/Feb/Mar 2004, p. 1.
2. *Sky and Telescope*: David Shiga, "Imaging Exoplanets," April 2004, Vol. 107, No. 4, p. 44 (Cover story).
3. *New York Times*: Dennis Overbye, "Grasping for Light of Distant Worlds," June 22, 2004, p. F1.
4. *Natural History Magazine*: At the Museum, "Picturing Planets," September, 2004, p. 76.
5. *New York Times*: Dennis Overbye, "Is it a Planet?" April 5, 2005, p. F4.
6. *MSNBC and Space.com*: Robert Roy Britt, "Planet Photo Debate Takes Wild Twist," April 30, 2005, <http://www.msnbc.msn.com/id/7684871/>.

7. *New York Times*: Dennis Overbye, “One Find, Two Astronomers: An Ethical Brawl,” September 13, 2005, p. F1.
8. *Eyepiece*: Bruce Kamiat, “Finding other Earths,” September 26, 2005, p. 1.
9. *USA Today*: Dan Vergano, “The definition of a planet is going under the telescope,” September 22, 2005, p. E2.
10. *Danbury Times News*: Robert Miller, “Mars back in View,” October 2, 2005, p. 4.
11. *Distant Light*: “Planet 10 with Dr. B. Oppenheimer & Keith Murdock,” November, 2005, pg. 3.
12. *Popular Mechanics*: “Cosmic Collisions,” March 16, 2006.
13. *ABC Good Morning America*: “Asteroid Near Miss,” interview with Bill Weir, July 3, 2006.
14. *ABC World News Tonight*: “Giant Asteroid,” interview with Charles Gibson and Terry Moran, July 3, 2006.
15. *Sky and Telescope*: Valerie C. Coffey, “MACHO Prediction Challenged,” October, 2006, p. 8.
16. *Popular Science*: Lauren Aaronson, “How Big can Planets be?” December, 2006, p. 23.
17. *WOR Radio*: “The Orionid Meteor Shower,” interview with Joe Bartlett and Donna Hanover, October 20, 2006.
18. *CSPAN*: “Death by Black Hole,” introduction for Neil DeGrasse Tyson’s book lecture, February 13, 2007.
19. *Reuters*: “Looking for New Worlds,” exhibition opening coverage, March 14, 2007.
20. *NBC*: “Looking for New Worlds,” exhibition opening coverage, March 14, 2007.
21. *Travelers Magazine*: “Looking for New Worlds,” exhibition opening coverage, March 14, 2007.
22. *CBS News HD*: “Earth Like Planet,” Evening spot, Scott Rapoport reporter, April 28, 2007.
23. *AT&T Tech News*: “Looking for Other Worlds,” program on the exoplanet exhibit in the Rose Center, October 16, 2007.
24. *NASA/PlanetQuest Website*: “The Lyot Project,” November 27, 2007.
25. *New York Times*: Dennis Overbye, “Star’s Dust May Hold Clue to New Planet,” March 26, 2008.
26. *Space.com*: Jeanna Bryner, “Photo Suggests Planet Under Construction,” March 26, 2008.
27. *New Scientist*: David Shiga, “New Image May Reveal Embryonic World,” March 27, 2008.
28. *Philadelphia Inquirer*: Tom Avril, “Image may be birth of distant planet,” March 31, 2008.
29. *Voice of America*: interview with Mona Dhuneim on AB Aurigae paper, March 29, 2008.
30. *Science News*: “Caught in the Act? Images may reveal planetary birth,” by Ron Cowen, April 5, 2008,
31. *AstroBulletins*: “Is this star gaining a planet?” Snapshot story, April 14, 2008.
32. *WNYC Leonard Lopate Show*: “Underreported: New Planet Forming?” 20 minute interview with Julie Burstein, April 17, 2008.
33. *New Scientist*: “Telescope could focus light without a mirror or lens” by David Shiga, May 1, 2008.
34. *Natural History*: “Science in the Summer,” by Kristin Phillips, June 2008.

35. *SEED Magazine*: “Profiles,” interview July 18, 2008, unpublished.
36. *NBC Nightly News*: “Planets imaged,” with Bob Bazell, November 13, 2008.
37. *New York Times*: “Images of Planetary Systems,” by Dennis Overbye, November 13, 2008.
38. *University of Cambridge*: “The Naked Astronomer,” February 15, 2010.
39. *Austrian Broadcasting Company*, “Other Worlds,” by Madeleine Amberger, interview on May 11, 2010.
40. *Washington Post*, “Stephen Hawking may be right about marauding aliens,” by Brian Palmer, September 27, 2010.
41. *About.com*, “What is a planet?” video interview, October 20, 2010.
42. *Science Magazine*: “A Distant Glimpse of Alien Life?,” by Yudhijit Bhattacharjee, Vol. 333, pp 930-932 (August 19, 2011).
43. *MIT Press Release*: “Two new earth-sized exoplanets discovered” December 21, 2011.
44. *SIFT Pod Casts*, “Origins of Life: Define Life,” by Bishop (Aaron) Sand, July 6, 2012
45. *Discover Magazine*, 80 Beats blog, “To Photograph Distant Planets, Just Turn Off the Starlight,” by Sophie Bushwick, July 9, 2012
46. *Sky and Telescope*, “Exoplanet Hunters Dim the Lights,” by Stephen Craft, July 11, 2012
47. *The Verge (theverge.com)*, “New telescope can spot planets orbiting stars outside our solar system,” by Andrew Webster, July 10, 2012
48. *Popular Science*, “New Telescope Optics Can Directly View Exoplanets By Hiding Interfering Starlight,” by Rebecca Boyle, July 10, 2012
49. *engadget*, “Project 1640 offers new way to search for planets beyond our solar system,” by Donald Melanson, July 11, 2012
50. *Scientific American*, “Scopes See Exoplanets and Violent Astrophysics,” by John Matson, July 31, 2012
51. *LiveScience*, “New Technique Allows Discovery of New Worlds,” by Kendra Snyder, August 1, 2012
52. *SIFT Pod Casts*, “Origins of Life: Origin Stories,” by Bishop (Aaron) Sand, August 7, 2012
53. *SIFT Pod Casts*, “Origins of Life: Origins Research Motives,” by Bishop (Aaron) Sand, August 23, 2012
54. *SIFT Pod Casts*, “Origins of Life: The Route to the Origin of Life,” by Bishop (Aaron) Sand, September 7, 2012
55. *SIFT Pod Casts*, “Origins of Life: The Story of Earth,” by Bishop (Aaron) Sand, September 26, 2012
56. *Skeptic Magazine*, “The Glare of Other Suns<sup>[1]</sup> An inside look at how astronomers<sup>[1]</sup> are searching for extrasolar planets,” by Apurva Narechania, Vol. 17, pp. 36-44 October 31, 2012
57. *SIFT Pod Casts*, “Origins of Life: Searching Space,” by Bishop (Aaron) Sand, October 31, 2012
- 58-??. Some thirty or forty articles published internationally covered my paper on HR8799 in March/April of 2013, ranging from *Scientific American* to *Fortune* magazine.

Due to volume, I have stopped tracking this category. My work has been featured in many news outlets, especially regarding the GPI and Project 1640 work, commentary on my own public writing and various other venues.

## Category III: Service to Science and Education

### Offices or editorial positions held in scholarly organizations:

1. AMNH's Institutional Representative for the Astronomical Society of New York, February 2006-2018, led the successful application for membership in this society for the Museum.
2. Member, Board of Directors, Astronomical Society of New York, September 2011-2018.

### Official committees of governmental organizations or NGO agencies:

1. National Science Foundation, Advanced Technologies and Instrumentation Panel, January 2004.
2. National Research Council Committee on Astronomy and Astrophysics, Terrestrial Planet Finder Subpanel, May 2004-September 2004.
3. National Optical Astronomical Observatories Adaptive Optics Development Panel, 2004.
4. National Aeronautics and Space Administration, ASTID Program Panelist, May 2004.
5. Gemini Observatory, Adaptive Optics Science Working Group, September 2003-August 2004.
6. National Aeronautics and Space Administration, TPF Foundation Science Program Referee, August 2004.
7. European Southern Observatory, Very Large Telescope Planet Finder Review Committee, December 15-16, 2004.
8. National Aeronautics and Space Administration, Terrestrial Planet Finder Coronagraph Mission, Science and Technology Definition Team, February 2005-May 2006.
9. Nederlandse Organisatie voor Wetenschappelijk Onderzoek, Astronomy Open Competition 2005, Proposal Reviewer.
10. Scientific Organizing Committee, Ultra-Low-Mass Star and Brown Dwarf Formation Conference, La Palma, Canary Islands, June 2005.
11. National Research Council Panel to Review NASA Capabilities Roadmap: Panel C Observatories and Telescopes, Instruments and Sensors, March 2005-April 2005.
12. National Aeronautics and Space Administration, Terrestrial Planet Finder Foundation Science Review Panel, September 2005.
13. Chair, Astronomy Section, US Air Force Maui Optical Site Technical Conference, September 2005.
14. Columbia University, Committee on Graduate Admissions, 2005-2006 academic year.
15. National Aeronautics and Space Administration, Universe Working Group for direct advisory to the Astrophysics Subcommittee of the NASA Advisory Committee, April 2006-April 2009.
16. World Scientific Publishing, book proposal referee, March 2006.
17. US Air Force, Advanced Maui Optical Station, External Advisor for telescope and system upgrades, AO Integrated Product Team, March 2006-October 2006.

18. National Aeronautics and Space Administration, Navigator Science Forum and Chapter writer, May 2006.
19. National Aeronautics and Space Administration, Discovery Class Missions Review Panel, July 17-21, 2006.
20. National Aeronautics and Space Administration, Origins Review Panel, Sept. 17-19, 2007.
21. Columbia University, Committee on Graduate Admissions, 2007-2008 academic year.
22. Cool Stars 15, Scientific Organizing Committee, Conference at St. Andrew's, Scotland, July 2008 (August 2007-July 2008).
23. Philadelphia Retina Endowment Fund, proposal referee, April 2008.
24. National Science Foundation, proposal referee, MRI Program, November 2009.
25. National Academies of Science, Astro2010, Electromagnetic Observations from Space, April 2009-May 2010.
26. National Science Foundation, Panelist for Congressionally mandated GSMT Partnership Review, June 2012.
27. Sagan Workshop, Scientific Organizing Committee, July 2013, (September 2012-).
28. National Aeronautics and Space Administration, Large Binocular Telescope Interferometer, Science Review Board, December 2012.
29. National Aeronautics and Space Administration, Mission Reviewer, February-March 2013.
30. National Science Foundation, ATI Program referee, February 2014.
31. NASA WFIRST-AFTA Mission Technology Assessment Committee, November 2013-2016.
32. NASA Astrophysics Senior Review, Panel Chair, April-May 2014.
33. NASA WFIRST/AFTA, Direct imaging and spectroscopy of exoplanets, Technology Assessment Committee, 2013-2016.
34. Columbia University, Committee on Graduate Admissions, 2014-2015 academic year.
35. Scientific Organizing Committee, The Spirit of Lyot Conference, Montreal, June, 2015.
36. NASA WFIRST-AFTA Mission Technology Assessment Committee, November 2013-2017.
37. NASA TDEM program review, July 2015-present (5 year term).
38. NASA Astrophysics Senior Review, Panel member, February-March 2016.
39. Scientific Organizing Committee, Cool Stars 19, Uppsala, Sweden, June 2016.
40. Professional Culture and Climate Subcommittee, AAS/Division of Planetary Sciences, February 2016-April 2017.
41. NSF SPG Panel Review, November 13, 2017
42. NSF SPG Panel Review external reviewer, May 2018
43. NASA/NExSci Sagan Workshop SOC, January 2018-July 2018
44. NASA Technology Assessment Committee—Exoplanet Exploration Program, July 2016-present (5 year term).
45. NASA Goddard Space Flight Center, Science Visiting Committee, April 2019-present, indefinite term

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46. NASA S5 (Starshade Technology for TRL-5) Review Committee, November 2018-present
47. NSF/NASA joint Radial Velocity Project external reviewer, December 2018
48. NASA Extreme Precision Radial Velocity Working Group, ex-officio member, March 2018-present
49. NASA Astrophysics Senior Review, Panel Member, January-June 2019

**Invited presentations at other scholarly institutions (includes only talks after July 2004):**

1. NASA/JPL/Caltech, Michelson Summer School on Coronagraphy, July 24, 2004, "Practical Coronagraphy."
2. Cambridge University, Institute for Astronomy, October 13, 2004, "The Lyot Project."
3. Boston University, November 30, 2004, "The Lyot Project."
4. University of Delaware, November 11, 2004, "The Lyot Project."
5. Yale University, December 2, 2004, "The Lyot Project."
6. SUNY-Stony Brook Physics Department, April 5, 2005, "The Lyot Project."
7. Kobe University, International Summer School on Planetary Science, July 12-15, 2005, "Exoplanetary Science."
8. NSF Center for Adaptive Optics, November 12, 2004, "Exoplanet Imaging."
9. Terrestrial Planet Finder Science Definition Team, September 13, 2005, "The Lyot Project."
10. Protostars and Planets V, Kona, HI, October 27, 2005 "Direct Detection of Exoplanets: Now and into the Future."
11. Space Telescope Science Institute, December 14, 2005, "The Lyot Project."
12. Carnegie Institution of Washington, Department of Terrestrial Magnetism, March 22, 2006, "The Lyot Project."
13. University of Leiden, Science Faculty Luncheon, October 24, 2006, "The Scientific Search for Life Outside the Solar System."
14. University of Leiden, Lorentz Center, October 24, 2006, "Observations of Brown Dwarfs and Exoplanets."
15. Cool Stars XIV, Pasadena, CA, November 8, 2006, "Observations of Brown Dwarfs and Exoplanets."
16. Michigan State University, Physics Department, January 31, 2007, "Comparative Exoplanetary Science."
17. University of Michigan, Physics and Astrophysics Department, February 1, 2007, "Comparative Exoplanetary Science."
18. Massachusetts Institute of Technology, Physics Department, February 22, 2007, "Comparative Exoplanetary Science."
19. New York Astronomical Society/American Physical Society meeting at Skidmore University, October 19, 2007, "Comparative Exoplanetary Science."
20. NASA Jet Propulsion Laboratory, September 16, 2008, "Comparative Exoplanetary Science."
21. CUNY-GC Graduate Center, Tri-State Astronomy Meeting, October 31, 2008, "Seeing Exoplanets"
22. NYU, Physics Colloquium, "Comparative Exoplanetary Science," April 3, 2009.

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23. California Institute of Technology, Sagan Summer Workshop, “Imaging Exoplanets,” July 21, 2009.
24. California Institute of Technology, Astrophysics Department, “The Making of Journey to the Stars,” July 22, 2009.
25. NASA Ames Research Center, Colloquium, “Comparative Exoplanetary Science,” September 8, 2009.
26. New York Academy of Sciences, Annual Board Meeting, “Imaging Exoplanets,” September 16, 2009.
27. University of California-Berkeley, Astronomy AO-Group Colloquium, “Project 1640 and GPI,” January 12, 2010.
28. Cambridge University, Institute for Astronomy, “Project 1640,” February 17, 2010.
29. Rutgers University, Department of Astronomy, “Comparative Exoplanetary Science,” November 5, 2010.
30. Penn State University, Department of Physics and Astronomy, “Comparative Exoplanetary Science,” April 13, 2011
31. Ringberg Workshop, “50 Years of Brown Dwarfs,” Keynote, October 2012
32. Palomar Science Meeting November 2012
33. Queens University, April 3, 2013
34. University of Montreal, April 4, 2013
35. International Subaru Conference, Kona Hawaii, December 2013
36. Columbia Astrophysics, March 5, 2014
37. “Exoplanets” NASA HQ, April 26, 2017
38. “Project 1640” NASA JPL, October 21, 2016
39. “Project 1640” UC-Irvine, June 6, 2017
40. “Planets Don’t Exist” Joint Princeton University/Institute for Advanced Study Astrophysics Colloquium, April 3, 2018
41. “Brown dwarfs and Planets at Palomar, 1994-2018” Palomar 70<sup>th</sup> anniversary symposium, July 2018.
42. “Panel Discussion on Career Trajectories” Alex Filippenko 60<sup>th</sup> Birthday Festschrift, Monterrey, CA, August 2018
43. Goddard Space Flight Center and American Astronautical Society, panel discussion, “Astrophysics in the Next 20 Years,” with Mark Clampin, Adam Riess, Julie McEnery, March 21, 2019.
44. “25 years in the life of an Astrophysicist” Columbia Alumni Reunion, June 1, 2019.

**Adjunct appointments with universities or other institutions:**

1. Adjunct Professor of Astronomy, Columbia University, September 2013-present.
2. Adjunct Associate Professor of Astronomy, Columbia University, September 2008-2013.
3. Visiting Scientist, Cambridge University, Institute for Astronomy, February 2010.
4. Adjunct Assistant Professor of Astronomy, Columbia University, September 2004-2008.
5. Visiting Scientist, Cambridge University, Institute for Astronomy, April-May 2006.
6. Visiting Scientist, Cambridge University, Institute for Astronomy, October 2004.

**Courses taught:**

1. Kobe University International Summer School on Exoplanetary Science (3 lectures), July 2006.
2. Frontiers of Science, Columbia University, core undergraduate course (17 lectures and 17 lab classes), Spring 2009.
3. Physical Sciences Lecture Series, Richard Gilder Graduate School, American Museum of Natural History, Spring 2009 (1 lecture).
4. Various individual classes 2017-2019 (6 lectures), Columbia University

**Student committees:**

1. Gail Schaeffer, Ph.D., Thesis Defense Committee, Stony Brook University, November 5, 2004.
2. Sasha Hinkley, Ph.D., Columbia University, 2005-June 2009. I was his primary advisor. Graduated with distinction.
3. Neil Zimmerman, Ph.D., Columbia University, 2006-2011. I was his primary advisor.
4. Andrew Brown, M.A., Columbia University, 2008-2011. I was his primary advisor
5. Sarah Tuttle, Ph.D., Columbia University, February 2007-June 2010.
6. Emily Rauscher, Ph.D., Columbia University, November 2007-June 2010.
7. Rahul Patel, Ph.D., Stony Brook University, 2012-, committee member.
8. Victor Garcia, Ph.D., Vanderbilt, February 2013-, committee member.
9. AAron Veicht, Ph.D., Columbia University, January 2013-2017, I was his primary advisor.
10. Research Exam Committee (PhD), Columbia May 2018.
11. Rose Gibson, Ph.D., Columbia University, May, 2018-, I am her primary advisor.
12. Catherine Clark, Ph.D., Northern Arizona University, January 2019-.

**Lectures aimed at popular audiences (only since 2004 and not at AMNH):**

1. Cadawalader, Wickersham and Taft, Library Week, April 22, 2004.
2. New Jersey Amateur Astronomers Association, June 19, 2004.
3. New York Amateur Astronomy Association, Lecture, "When will we be able to see exoplanets?" February 3, 2005.
4. Rockland Astronomy Club, "The 10<sup>th</sup> Planet or What is a Planet Anyway?" October 14, 2005.
5. MacMillan/McGraw Hill Texbook "Meet a Scientist" Feature for California Edition, with R. Kinzler and O. De Marco, December 2005.
6. North East Astro Forum, "Exoplanets," May 6, 2006, one of the largest meetings of amateur astronomers in the country.
7. St. Wilfrid's Club, "Exoplanets," January 29, 2007.
8. The Explorer's Club, "Toward Exploration of Other Worlds," January 28, 2008.
9. The Secret Science Club, "Comparative Exoplanetary Science," April 2, 2008.
10. Morgan-Stanley, "Journey to the Stars and the Search for Other Worlds," July 14, 2009.
11. Hudson River Museum, "Seeing Other Worlds," September 27, 2009.
12. California Academy of Sciences, "The research behind Journey to the Stars," January 11, 2010.

13. Rubin Museum of Art, "Carl Sagan and Exoplanets," March 10, 2010.
14. New York Academy of Sciences, "Exoplanets: A Galaxy of Worlds Awaits Us," May 27, 2010.
15. New York Academy of Sciences, "Comparative Planetary Science", April 12, 2011, also broadcast by webinar.
16. Rolnick Observatory, Westport, CT, "Comparative Planetary Science," November 15, 2011.
17. Culture Clatch Tract 187, "Where is all the life in the universe?" New York City, October 15, 2014.
18. "The Word Planet is No Longer Meaningful" NY Amateur Astronomers Association, December 4, 2017.
19. Columbia Alumni Association, "What did I do?" June 1, 2019.

**Popular Press Articles Authored:**

1. "Mauna Kea" by B. R. Oppenheimer, *Natural History*, Spring Travel Issue (New York: Natural History Magazine; 2003), Vol. 112, pp. 86-87.
2. "White Dwarfs by the Billions" by B. R. Oppenheimer, in *Power Web Astronomy: 2002 Annual Edition*, D. Dathe, ed. (New York: McGraw-Hill; 2002).
3. "White Dwarfs by the Billions" by B. R. Oppenheimer, *Mercury*, Vol. 30, p. 16 (2001 May and June).

Contributing author for *Cosmic Frontiers: Astronomy at the Cutting Edge*, S. Soter and N. deG. Tyson, eds. (New York: New Press and the National Center for Science Literacy, Education and Technology, American Museum of Natural History; 2001 April).

Contributions include essays, written in collaboration with S. Soter, on the historical development of ideas concerning the following:

4. "Friedrich Bessel and the Companion of Sirius"
  5. "Ernst Chladni and Rocks from the Sky"
  6. "The Cosmic Microwave Background Radiation"
  7. "Gerard Kuiper and the Trans-Neptunian Comet Belt"
  8. "Georges Lemaitre, Father of the Big Bang"
  9. "John Michell and Black Holes"
  10. "Ole Roemer and the Speed of Light"
  11. "Vera Rubin and Dark Matter"
  12. "Neutrino Observatories"
  13. "Lyman Spitzer and the Space Telescope"
  14. "Fritz Zwicky's Extraordinary Vision"
  15. "Cecilia Payne-Gaposchkin and the Stuff of Stars"
16. "Reasons behind 1950s Oppenheimer security decision are debated" by B. R. Oppenheimer, *Physics Today*, Vol. 52, p. 13 (1999 June).
  17. "Brown Dwarf Science Matures" by B. R. Oppenheimer. News Note in the March 1999 issue of *Sky and Telescope*, p. 20.
  18. "A Measured Step into the Universe's Farthest Reaches" by B. R. Oppenheimer. News Note in the December 1998 issue of *Sky and Telescope*, p. 18.
  19. "Where Have All the Baryons Gone?" by B. R. Oppenheimer. News Note in the October 1998 issue of *Sky and Telescope*, p. 26.

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20. "The Milky Way's Deadly Spiral Arms" by B. R. Oppenheimer. News Note in the July 1998 issue of *Sky and Telescope*, p. 20.
21. "Brown Dwarf" by S. R. Kulkarni and B. R. Oppenheimer, in *The McGraw-Hill Yearbook of Science and Technology 1998* (New York: McGraw-Hill; 1998), p. 40.
22. "Brown Dwarf" by B. R. Oppenheimer, in the *McGraw-Hill Encyclopedia of Science*, 2011 (New York: McGraw-Hill).

**Paid or unpaid professional activities outside of the AMNH, not listed above:**

Refereed typically 5 to 20 papers per year for *Science*, *Nature*, *Astrophysical Journal*, *Astronomische Nachrichten*, *Publications of the Astronomical Society of the Pacific*, *Astronomical Journal*, *Astronomy and Astrophysics*, and *Monthly Notices of the Royal Astronomical Society*. Reviewed and refereed two books for Oxford U Press and Harvard U press each, and four for MIT Press.