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### **POSITIONS**

Senior Research Scientist, Principal Scientist, Research Scientist, JPL	3/98 - present
Visiting Fellow, Hokkaido Univ	01-02/2008
Visiting Associate, Caltech	1998 – 2014
Sr. Research Associate, Sr. Research Fellow, Research Fellow, Caltech	1/87 - 2/98
Assistant Scientist, Max Planck Institut für Radioastronomie, Bonn, Germany	2/85 - 12/86

### **EDUCATION:**

Ph.D. – Physics – UC-Berkeley; 12/84  
B.S. – Physics – MIT; 6/78

### **EXPERIENCE:**

Broad experience with vis/IR/submm optics: cameras, spectrometers, interferometers, adaptive optics, wavefront sensors, fiber optics, coronagraphy, holography, microscopy, fluorescence, light-field imaging.

**Coronagraphy:** Leading NASA APRA & TDEM projects to develop and test vortex phase masks for exoplanet coronagraphy. Led development of high-contrast vortex coronagraphs for the Palomar, Keck and Subaru telescopes.

**JWST MIRI:** Led the JPL design study and successful proposal for the JWST MIRI instrument; was initial JPL MIRI project scientist. Built the Infrared Coronagraphic Testbed to test the flight JWST-NIRCAM coronagraphic masks.

**Nulling interferometry:** Led the technical development of the Keck nuller, and a NASA APRA project to build the Palomar Fiber Nuller. Conceived the modified Mach-Zehnder nuller and the single-mode fiber nuller, as well as a highly accurate statistical null depth retrieval technique.

**Observations:** Very broad experience observing exoplanets, exozodiacal disks, the black hole at the Galactic Center, star formation regions, the planets in our solar system, the terrestrial atmosphere, and microbial life in terrestrial water samples. Was a Keck exozodi key project PI, and a NASA Origins program PI. Experience with spectroscopy from the optical to the radio.

### **PAST POSITIONS:**

**NASA ExoPAG:** executive committee member, spring 2013 – spring 2016

**JWST:** (1998 - early 2000s): Mid-IR Steering Committee member; Ad Hoc SWG member; Mid-IR Program Planning Group member, MIRI Instrument Scientist (JWST now): member of MIRI coronagraph science team; member of NIRCAM coronagraph team

**Keck Interferometer:** Nuller Cognizant Engineer, Nulling Scientist, Keck key project PI (early 2000s)

**TPF-Interferometer:** SWG member, Interferometer Scientist, Nuller Cognizant Engineer (mid 2000s)

## **SELECTED PUBLICATIONS:**

- “[Ne II] Observations of the Galactic Center: Evidence for a Massive Black Hole,” Serabyn, E. & Lacy, J.H. 1985, **Astrophys. J.** 293, 445.
- “Extreme Adaptive Optics Imaging with a Clear and Well-Corrected Off-Axis Telescope Subaperture,” Serabyn, E. et al. 2007, **Astrophys. J. Lett.** 658, 1386.
- “An image of an exoplanet separated by two diffraction beamwidths from a star,” E. Serabyn, D. Mawet & R. Burrus 2010, **Nature** 464, 1018.
- “Direct Imaging Detection of Methane in the Atmosphere of GJ 504 b,” M. Janson et al. 2013, **Astrophys. J. Lett.** 778, L4
- “Discovery of a low-mass companion around HR 3549,” D. Mawet, et al. 2015, **Astrph J** 811, art. id. 103.
- “The W.M. Keck Observatory infrared vortex coronagraph and a first image of HIP79124 B,” E. Serabyn et al. 2017, **Astron. J.** 153, 43
- “Resolution optimization of an off-axis lensless digital holographic microscope,” E. Serabyn, K. Liewer and J. K. Wallace 2018, **Applied Optics** 57, A172
- “An H-band Vector Vortex Coronagraph for the Subaru Coronagraphic Extreme-Adaptive Optics System,” J. Kuhn et al. 2018, **Pub. Astron. Soc. Pac.**, 130, 035001
- “Vector vortex coronagraphy for exoplanet detection with spatially variant diffractive waveplates,” E. Serabyn, C. Mejia Prada, P. Chen & D. Mawet 2019, **J. Opt. Soc. Am. B** 36, D13
- “ELVIS: A Correlated Light-Field and Digital Holographic Microscope for Field and Laboratory Investigations,” T. Kim, E. Serabyn et al. 2020, **Microscopy Today**, vol. 28, issue 3, May 2020, doi:10.1017/S1551929520000899
- “Enhancing final image contrast in off-axis digital holography using residual fringes,” M. Bedrossian, J.K. Wallace, E. Serabyn, C. Lindensmith & J. Nadeau 2020, **Optics Express**, 28, 16764
- “Keck/NIRC2 L’-Band Imaging of Jovian-Mass Accreting Protoplanets around PDS 70,” J. J. Wang et al. 2020, **Astron. J.**, 159, 263
- “Nulling Interferometry,” E. Serabyn 2021, in **WSPC Handbook of Astronomical Instrumentation**, Vol 3, ed. A.M. Moore, World Scientific, <https://www.worldscientific.com/worldscibooks/10.1142/9446>, 71
- “Using the Gouy phase anomaly to localize and track bacteria in digital holographic microscopy 4D images,” T. Gibson, M. Bedrossian, E. Serabyn, C. Lindensmith and J. L. Nadeau, **Jour. Opt. Soc. Am. A**, 38, A11, <https://doi.org/10.1364/JOSAA.404004>, 2021
- “Extremely high spectral resolution measurements of the 450  $\mu\text{m}$  atmospheric window at Chajnantor with APEX,” J.R. Pardo et al. **Astr & Astrph** 664, A153, <https://doi.org/10.1051/0004-6361/202243409>, 2022
- “Direct-imaging discovery & dynamical mass of a substellar companion orbiting an accelerating Hyades Sun-like star with SCExAO/CHARIS,” Kuzuhara, M. et al., **Astroph. J.** 934, L19, <https://doi.org/10.3847/2041-8213/ac772f>, 2022
- “A super-Earth orbiting near the inner edge of the habitable zone around the M4.5 dwarf Ross 508”, Harakawa, H. et al., **Publ. Astron. Soc. Japan** 74, 904, <https://doi.org/10.1093/pasj/psac044>, 2022
- “A multi-modal volumetric microscope with automated sample handling for surveying microbial life in liquid samples,” T. Kim et al., **Front. Astr. & Space Sci.** <https://doi.org/10.3389/fspas.2022.763329>, 2022
- “The discovery and characterization of (594913) ‘Ayló’chaxnim, a kilometer sized asteroid inside the orbit of Venus,” B.T. Bolin et al., **Mon. Not. Royal Astr. Soc. Lett.**, 517, L49, <https://doi.org/10.1093/mnrasl/slac089>, 2022
- “Improving image resolution on point-like sources in a type-1 light-field camera,” E. Serabyn, **Jour. Opt. Soc. Am. A**, 39, 364, <https://doi.org/10.1364/JOSAA.445024>, 2022
- “Observing inside the coronagraphic regime with optimized single-mode nulling interferometry,” E. Serabyn, G. Ruane, D. Echeverri, **Proc. SPIE** 12180, 121800N, <https://doi.org/10.1117/12.2630589>, 2022
- “An Earth-sized Planet around an M5 Dwarf Star at 22 pc,” T. Hirano et al., **Astron. J.**, 165, issue 3, id.131, doi: [10.3847/1538-3881/acb7e1](https://doi.org/10.3847/1538-3881/acb7e1), 2023
- “First Observations of the Brown Dwarf HD 19467 B with JWST,” A. Z. Greenbaum et al. **Ap. J** 2023, 945, 126
- “Searching for Exoplanets and Life with Novel Optical Techniques,” E. Serabyn, [ico25.org](https://ico25.org), TS 9-3-01.pdf 2022