

Subject: VOSA Meeting in 2 wks, Nov 12 EXOPLANETS

From: <johnj@latigooptics.com>

Date: 10/30/19, 4:43 PM

To: <sales@opsysgrp.com>

1st Notice 2 Weeks Away

Please register with john@latigooptics.com

(for food estimate – last minute walk-ins are completely welcome)

Those who have registered are listed at the bottom.



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Ventura OSA (CVOSA) Announcement for **November 12, 2019** ([Please RSVP](#))

Space telescopes & instruments to characterize exoplanets

James B. Breckinridge

Adjunct Professor, Wyant College of Optical Sciences, University of AZ, Tucson.

&

Graduate aeronautical laboratory, California Institute of Technology (GALCIT)



<https://exoplanets.nasa.gov/exep/coronagraphvideo/>



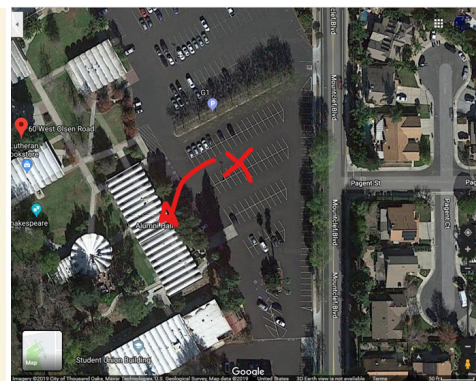
Bernard Lyot, 1939, at Pic du Midi
French Astronomer
Inventor of the Coronagraph

Abstract

We will examine several contrast-degrading static signature sources present in current terrestrial exoplanet Lyot Coronagraph/Telescope optical systems. These are:

- Unnecessary optical surfaces, which increase cost, absorption, scatter, wavefront control and alignment issues.
- Diffraction from secondary support systems and classical hexagon segmented apertures, which masks the low IWA terrestrial exoplanets. A suggested mitigation is to investigate curved secondary support systems and a pinwheel architecture for the deployable primary aperture.
- Polarization Fresnel and form birefringence aberrations, which distort the system PSF, introduce absorption, scatter and wavefront control issues. Mitigation is to reduce all ray-angles of incidence to a minimum, investigate zero-loss polarization compensation wavefront technology, and investigate metal thin film deposition processes required to minimize form birefringence in large-area high-reflectivity coatings.
- Small-angle specular or resolved angle scattered light, which places a narrow halo of incoherent light around the base of the PSF. There is no requirement on mirror smooth-surface scatter. Investigate the physical source of the small angle scatter & develop mirror polishing & thin film deposition processes to minimize scatter.

Our meeting is At Cal Lutheran University
Room 128
3293 Mountclef Blvd, Thousand Oaks, CA



Enter the parking lot from Montclef –lots of easy parking. Park at the X, meet at the arrow.

GPS 34.224432, -118.876235

<https://goo.gl/maps/7TWoMaUHRpM755x97>

6:00p Mixing and Stand Up Dinner

7:00p Speaker

\$25 donation on site (it is a donation for food, insurance and venue. If you need a no-food, student, pre-school, old age or other discount please give yourself one).



James Breckinridge

Jim Breckinridge received his BSc in Physics from Case Institute of Technology in 1961. He worked three years at Lick Observatory, building electronographic image intensifier tubes and applying them to astronomical problems. Jim moved to Tucson and joined the then new Kitt Peak National Observatory as a solar observer and builder of spectrometers and an FTS. In 1968 he started taking classes at the Optical Sciences center and earned his MSc (under Aden Meinel) in 1970. He continued taking classes at the University, while working at Kitt Peak, finished a dissertation by designing and building a white-light rotational interferometer to measure the degree of partial coherence in wavefields and study methods to image through atmospheric turbulence. Breckinridge graduated with the PhD in 1976 and moved to NASA/JPL where he designed and built the 1-meter OPD FTS that flew 3 missions on NASA/ESA spacelab. This instrument called ATMOS recorded the absorption spectrum of the Earth's stratosphere from 2 to 16 microns to establish the baseline state of fluor hydrocarbons. In 1980, Jim was assigned to create a state-of-the art optical design and engineering capability at JPL. He recruited and hired about 40 optical engineers, many OSC graduates over the next 15 years. He was the manager of the section that built spectrometers and imagers for Galileo and Cassini. He served as a member of the HST failure board of investigation and technical members of his staff rebuilt the WF/PC2 to correct the error. From 1980 to current (2020) Breckinridge has been teaching a class in Optical System Engineering at Caltech. Dr. Breckinridge was the 1994 President of SPIE, is a Fellow of both OSA and SPIE, Fellow of the RAS, and currently associate editor of the Journal of Astronomical Telescopes and Instruments (JATIS). He is the PI of a NASA research grant to investigate the role of polarization in image formation in Lyot coronagraphs, where he is the co-supervisor of 2-PhD students at the College of Optical Sciences.



From John McDonald

Hoping California hasn't burned down by the date!

Our sister group, OSSC meets the day after we do:

Wednesday 13 November, *Optical Payloads for Telescopes & Instruments*:

Innovation & Creativity by Kevin Romero. www.osscc.org

If you want to be added or removed to/from our mail list please notify us at john@latigooptics.com

For our meeting (Ventura OSA) please register to john@latigooptics.com

RSVPs

1. Ginny Ford
2. Eric Ford
3. Fred Houston
- 4.