

# Fall 2022 Joint Colloquium

## Materials Department & Materials Research Laboratory

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Northrop Grumman

Friday, October 14, 2022  
11:00 am  
ESB 1001



### The James Webb Space Telescope; Its Mission, Design and Development

This talk introduces the James Webb Space Telescope, NASA's next large astrophysics mission, launched Christmas Day, 2021 and now in science operations. We will introduce Webb's science goals; detection of



the universe's first light, assembly of galaxies, birth of stars and observation of planets and exo-planets. How the design responds to mission requirements and produces the performance necessary to achieve the mission's goals will be discussed. Many of the unique elements of the architecture will be explored. The main engineering challenges for largest telescope ever built in space are discussed and illustrated. A special emphasis for this discussion will be on the consideration of materials properties. The talk concludes with a brief look at some of the initial science results of humanity's largest telescope in space.

### Bio

Jonathan Arenberg is currently Chief Mission Architect for Science and Robotic Exploration at Northrop Grumman. His work experience includes all phases of program and mission development, from early technology development, mission concepts, detailed design, test and verification and integration and test. His last major program assignment was as Chief Engineer for the James Webb Space Telescope. In the last few years, Dr. Arenberg has lead major mission studies for NASA and other government customers. He has been a principal in major paradigm breaking concepts; the Starshade, MODE lenses and the OASIS mission based on an inflatable reflector. In addition to optical systems experience from x-rays to THz systems, he is also familiar with laser systems, components and testing.

Dr. Arenberg has a Bachelor of Science in physics, a Master of Science and PhD in engineering all from UCLA. He is a Fellow of the international optics and photonics society, SPIE, for his contributions to astronomy and lasers. He is the author of over 200 conference presentations, papers and book chapters and holds a 15 European and U.S. patents in a wide variety of areas of technology. Dr. Arenberg is also the co-author of a recent book on systems engineering for astronomy from SPIE press. In 2020, he was awarded the UCLA Samueli School of Engineering and Applied Science's award for professional achievement.

Hosted by Sriram Krishnamoorthy.