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Space telescopes for astrophysics and astronomy have provided some of the most significant contributions to science throughout the history of the international space program. The Hubble Space Telescope (HST) continues to amaze and astound the astronomical community with a seemingly endless stream of new discoveries and measurements while further captivating the public eye with its observations and imagery. The last HST servicing mission, which repaired existing instruments and installed two completely new instruments, has helped to ensure a continuation of the images and discoveries that have long captured the global public attention. In addition, the observations from HST are complemented by others, notably from the "warm" Spitzer Space Telescope mission, the Chandra X-Ray Observatory, the recently completed Herschel Space Observatory, and the Fermi Gamma-Ray Space Telescope (celebrating its fifth year on orbit). With these space-based observations complemented by observations from ground and airborne systems, the world is poised for continued discovery for many years to come. Though the budgetary environment remains challenging for all of these programs, in particular for new programs, significant future investment is in place for continued progress. As a major example, we are actively preparing for the results from the James Webb Space Telescope (JWST), on track for launch in 2018.

In addition to facility class space telescopes designed to provide a broad range of capabilities for the detailed study of astrophysical phenomena, survey telescopes such as the Wide-field Infrared Survey Explorer (WISE) and Kepler have recently added to our understanding of the universe and have laid the foundations for observational campaigns of observatories in the present and future. Kepler, a system well known to the global public, has produced many potential planet discoveries, including earth-sized candidates in the habitable zone. As of this writing, according to the NASA Kepler Web site (http://www.nasa.gov/mission_pages/kepler/main/index.html as of September 13, 2013.), 151 planets have been confirmed, complemented by 3,548 planet candidates and 2,165 eclipsing binary stars. Kepler has collected enough data to keep a team of scientists busy for two or more years mining the data for even more planets to study. In addition, though WISE was retired in 2011 after a successful mission, NASA is currently planning to reactivate WISE for a survey of near-earth asteroids.

This special section of *Optical Engineering* is devoted to space telescope technologies and concepts. It consists of ten papers concentrating on a variety of telescope technology and system concept developments that are laying the key groundwork for the potential supporting technologies of future space telescopes. The technologies presented range across the electromagnetic spectrum and include applications from narrow-band diffractive large optics; to segmented x-ray optics; to advances in lightweight optics, active optics, and long-wave detectors; to concepts for large modular space telescopes that could overcome some launch vehicle limitations by assembly in space; to an update on costing models that have been presented previously at SPIE and other society conferences but can now be improved with more data and detailed analysis. Though some of these papers document aspects of key existing systems, the concentration of this section is on new space telescope technologies being designed, developed, and tested to further push the limits of astronomy and astrophysics for the future.

Jacobus (Jim) M. Oschmann received his BS in optics from the University of Rochester, New York, and his MS from the Optical Sciences Center at the University of Arizona. He is currently the vice president and general manager for the Civil and Space Technology business unit of Ball Aerospace & Technologies Corp. The company's space and earth science business reports to him. This includes Ball's participation in the James Webb Space Telescope (JWST),

the Kepler Telescope, several earth science and space technology programs. Throughout his nine years at Ball, he has served on many independent reviews, both internally and externally, for numerous scientific programs such as JWST, Kepler, Large Synoptic Survey Telescope, Atacama Large Millimeter Array, and the National Solar Observatory's Advanced Technology Survey Telescope. Prior to joining Ball Aerospace & Technologies Corp., he worked for the Associated Universities for Research in Astronomy both as systems engineer and then project manager for the Gemini Observatory design and construction, and later as the first project manager for the ATST. He has served as Chair, co-chair, or committee member for many of the conferences associated with SPIE Astronomical Instrumentation. He is a Fellow of SPIE and a lifetime member.

Mark Clampin is currently the James Webb Space Telescope (JWST) Observatory project scientist at Goddard Space Flight Center, and supports the COR/PCOS Office as chief technologist. He is a co-investigator on the Transiting Exoplanet Survey Satellite (TESS) and the Advanced Camera for Surveys (ACS) science team. Prior to working for NASA, he was ACS Group manager at the Space Telescope Science Institute (STScI), where he supported three Hubble Space Telescope (HST) servicing missions. He is currently working on the formation and evolution of planetary systems and the direct detection of exoplanets. He has also designed ground-based telescope instruments including adaptive optics systems, coronagraphs, and detectors.

Howard MacEwen is the founder and owner of Reviresco LLC, an independent aerospace science and engineering consultancy. His extensive career involved identifying, evaluating, and advocating new technologies and concepts for space systems, specifically optical systems for intelligence, defense, and astronomy, and he has chaired numerous SPIE conferences on space telescope concepts and technologies. He was awarded a BS in physics from Georgetown University, Washington, DC, and a PhD in aerospace engineering from The Catholic University of America in 1975.