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Calibration of Multiple Optical Telescopes in the Falcon Telescope Network ETHAN ALBRECHT, FRANCIS CHUN, MICHAEL PLUMMER, KODY WILSON, United States Air Force Academy, DAVID STRONG, Strong EO Imaging, Inc., CASEY SCHUETZ-CHRISTY, Millenium Engineering Integration Co. — Ground-based observations of satellites are a key component of Space Domain Awareness and support the mission of the United States Space Force. However, satellite observations cannot be compared simultaneously from geographically diverse locations without a common basis for comparison. In this project, a method was developed to calibrate a network of telescopes using measurements of the same calibration stars (CalStars) recorded simultaneously at several observation sites across the continental United States. The Falcon Telescope Network (FTN) consists of six telescopes in Colorado, one in Pennsylvania, one in Chile, and two in Australia. These telescope systems have identical hardware components such as the mount, camera, filter wheel, and photometric filters. The U.S. based telescopes were used to observe CalStars of different magnitudes and air mass selected from the Landolt and Oja star catalogues. The CalStars are observed simultaneously by multiple sites on multiple nights throughout the year so that we can quantitatively compare their respective extinction coefficients and zero points, with the ultimate goal of developing photometric transformation relationships between the telescopes. DISTRIBUTION STATEMENT A. Approved for public release, distribution unlimited USAFA PA# USAFA-DF-2020-335

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