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Design Considerations: Falcon M Dwarf Habitable Exoplanet Survey MATTHEW MILLER, United States Air Force Academy , EVAN HATFIELD, ZACK WILCOX, Palmer Ridge High School, DEVIN DELLA-ROSE, FRANCIS CHUN, STEVEN NOVOTNY, KIMBERLEE GRESHAM, ROGER TIPPETS, DANIEL POLSGROVE, United States Air Force Academy — M-dwarf stars are attractive targets for exoplanet discoveries because of the deep light curve transits for Earth-sized exoplanets. However, they also present specific challenges in acquiring the uncertainty and photometric stability needed to make statistically significant observations of Earth-sized exoplanet transits. In this study, we showed that a large source of uncertainty in photometric stability is the SNR of dim check stars, used in differential photometry. Additionally, we have demonstrated that we can achieve an uncertainty as low as 1.2mmag using the Falcon Telescope Network.

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