**AN EXOLIFE FINDER TELESCOPE (ELF) FOR PROX B AND BEYOND.** J. R. Kuhn[1], [1]Institute for Astronomy, University of Hawaii (34 Ohia Ku St. Pukalani, HI USA 96768, jeff.reykuhn@yahoo.com), S. V. Berdyugina [2]Kiepenheuer-Institut fur Sonnenphysik, (Freiburg, Germany, berdyugina@kis.uni-freiburg.de), D. Halliday [3]Dynamic Structures Ltd. (Vancouver, Canada, starcluster18@gmail.com), G. Moretto [4]CRAL/CNRS Ecole Normale Superieure (Lyon, France, gil.moretto@univ-lyon1.fr), M. Langois [5]CRAL/CNRS Ecole Normale Superieure (Lyon, France, maud.langlois@obs.univ-lyon1.fr)

**Introduction:** Post Keck-era large optical telescopes will combine elements of interferometry with large, light-weight subapertures[1]. Mass and material stiffness will be achieved in light-weight active structures that include metamaterial reflecting subapertures and fast algorithms that use in-field wavefront references. For small field-of-view observations with sufficiently bright host stars it is possible to build dedicated coronagraphic telescopes optimized for exoplanet studies with 50m diameter or larger effective apertures [2]. During the last two years a group of scientists and engineers from Canada, France, and Hawaii have been developing a 25m telescope concept that would allow photometric light-curve inversion of a Prox-b-like exoplanet to recover surface structure with sufficient resolution to detect Earth-like continents and a variety of atmospheric biomarker signals[3]. It is expected that this instrument could be built for an order of magnitude less than currently planned Keck-era astronomical telescopes of the same aperture that are not optimal for exoplanet direct imaging. This presentation summarizes the “ExoLife Finder” (ELF) and its 5-year timeline to completion.

**References:** [1] Kuhn, J. R. et al. (2014) *SPIE*, *9145*, 91451G (8pp), [2] http://www.the-colossus.com/, [3] http://www.planets.life/