

THE FILLED APERTURE INTERFEROMETRIC TELESCOPE COLOSSUS OPTIMIZED FOR FINDING LIFE BEYOND THE SOLAR SYSTEM.

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Detecting life and civilizations on distant exoplanets requires very large optical systems optimized for high-contrast performance within a narrow field.

Recently we have proposed a concept for such systems which crosses the boundary between fixed aperture telescopes and interferometers (Kuhn et al. 2014). Combining technologies which decrease the system moving mass, we can overcome the cost vs mass scaling law that makes conventional large-aperture telescopes relatively expensive.

Here we describe a concept which breaks this scaling relation in a large optical/IR system called “Colossus” (www.the-colossus.com). It is designed to consist of sixty 8m telescopes mounted on a common frame, equivalent to the aperture of a 75m telescope. We demonstrate how this system can lead us to the detection of extrasolar life and realistically provide the answer to the profound question “Are we alone?”.

References:

Kuhn, J.R., Berdyugina, S.V., Langlois, M., Moretto, G., Harlinton, C., Halliday, D. 2014: *Looking beyond 30m-class telescopes: the Colossus project*, SPIE Conference on Astronomical Telescopes and Instrumentation, 9145, id. 91451G 8 pp.

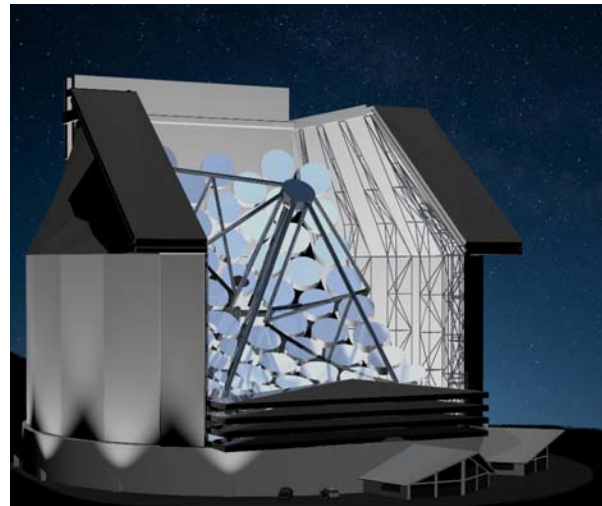


Figure: The non-redundant Colossus system configuration and optimal enclosure design.