

Exoplanet Transits as the Foundation of an Interstellar Communication Network. D. H. Forgan¹, ¹School of Physics and Astronomy, University of St Andrews, North Haugh, St Andrews, UK KY16 9SS, Email: dhf3@st-andrews.ac.uk

Two fundamental problems for extraterrestrial intelligences (ETIs) attempting to establish interstellar communication are timing and energy consumption. Several authors have shown how utilising the study of exoplanets via their transit across the host star may yield a means of solving both problems. An ETI 'A' can easily communicate with ETI 'B' if B is observing transiting planets in A's star system, either by building structures to produce artificial transits observable by B [1], or by emitting signals at B during transit [2].

As a result, this can produce a network of interconnected civilisations, establishing contact via observing each other's transits. I conduct Monte Carlo Realisation simulations of the establishment and growth of this network. This network is in essence an undirected graph, with multiple connected components (and isolated vertices). I will outline the properties of this graph, and comment on its suitability as a means of establishing a robust communications system. Measuring this robustness will have obvious implications for future passive and active SETI strategies.

[1] Arnold L., (2005), *ApJ*, 627, 534-539

[2] Kipping D.M. and Teachey A., (2016), *MNRAS*, 459, 1223-1241