

49th IAA SYMPOSIUM ON THE SEARCH FOR EXTRATERRESTRIAL INTELLIGENCE (SETI) –  
The Next Steps (A4)  
SETI 1: SETI Science and Technology (1)

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COMMENSAL SETI SURVEY STRATEGIES FOR MEERKAT

**Abstract**

Breakthrough Listen will shortly begin conducting a commensal SETI survey with the MeerKAT radio telescope in South Africa. As a fully commensal survey, the Breakthrough Listen system will search for evidence of intelligent life simultaneously during other primary science observations. A key goal of the survey is to search for technosignatures in observations of 1 million nearby stars. One of the strategies to achieve this goal will be to beamform on sources of interest present in the primary field of view of the telescope for each pointing. These targets for beamforming are drawn from a database of stars pre-selected according to a variety of criteria. The ability to observe the desired sources is dependent on their proximity to the pointings planned by the Large Survey Projects (LSPs). It is probable that certain

regions of the sky would be less likely to be covered by all of the LSP observations. As a result, SETI survey targets in these regions are less likely to be available for commensal observations. A small amount of open-call primary time on the telescope could be spent observing these missing targets. This work examines strategies to maximise the number of targets that can be observed in a specific amount of primary observing time, given that multiple targets can be observed simultaneously within the primary field of view. The optimal sequence of pointings is also discussed, given a particular field of view size, maximum number of simultaneous beams, and specific observation times.