MeerKAT open time call 3 December - Proposal summary

MeerKAT's unprecedented view of large-scale precessing jets: a pilot study of sub-parsec separation binary-SMBH candidates	
Proposal number 42	Thu Jan 31 2019 13:47:58 GMT+0200 (SAST)
Email address	roger.deane@up.ac.za
Principal Investigator	Roger Deane (UP)
Lead technical contact	Roger Deane (UP)
Authors	Bernie Fanaroff (SARAO), Kshitij Thorat (SARAO), Oleg Smirnov (Rhodes/SARAO), Sarah White (Rhodes/SARAO)

Abstract:

Sub-parsec binary SMBHs are predicted to dominate the nHz - micro-Hz stochastic gravitational-wave background that MeerKAT/SKA1-MID aim to detect, hence constraining this population from an electromagnetic perspective is an important aspect of gravitational wave astrophysics. Despite the expected ubiquity of binary-SMBHs, our observations of these systems, however, still remain limited. Recently, Krause et al. (2018) performed a systematic search for precessing jets in a complete sample of well-known radio sources (the 3CRR catalogue). They make the striking and somewhat controversial claim that the majority of powerful radio sources host binary SMBHs, based on the precession of the observed jet axes. If true, this would imply that jet morphology is an efficient method to identify binary SMBHs (given the appropriate interferometer), and that there ought to be some evidence of this precession in the older, more diffuse synchrotron emission. This proposal seeks to test Krause et al.'s assertion enabled by the superior imaging performance, sensitivity, and large fractional bandwidth of MeerKAT.

Observation parameters:

Targets	3C 175 07:13:02.40 +11:46:14.7; 3C 274 12:30:49.40 +12:23:28.0; 3C 300 14:23:01.03 +19:35:17.4; 3C 334 16:20:21.82 +17:36:24.0; 3C 433 21:23:44.53 +25:04:11.9		
Total time	16 in 2 epochs	**Dump rate**	8 s
Daytime	No preference	**Variable/Transient**	No
Baselines	No more than of the outer 9 ring antennas can be excluded.		

List of files uploaded. Files in order of upload. Usually just revising their proposal, so click the last one, but some people attached several different files, so they may all be useful.
https://drive.google.com/open?id=1qgEx-xMmL13fi05MICKnOAQldO0c5xoz .

File comments: