

RadioNet support for **TA users** at scientific events

Application form

TA PARTICIPANT INFORMATION	
NAME	<i>Dr Jack Frederick Radcliffe</i>
HOME INSTITUTE	<i>University of Pretoria, Private Bag X20, Hatfield, 0028, Pretoria, South Africa</i>
EVENT	<p><i>Name:</i> SKA-VLBI Key Science Projects and Operations Workshop</p> <p><i>Place:</i> SKA Organisation, Jodrell Bank, Lower Withington, Macclesfield, Cheshire, SK11 9DL, UK</p> <p><i>Date:</i> 14-17 October 2019</p> <p><i>Event Information:</i> This event aims to introduce the VLBI capabilities and observing modes of the SKA to the community, and present the latest results in the SKA high priority science areas where VLBI will make an impact. The number of participants is 53 (correct as of 15/06/2019) and the event webpage can be found here: https://indico.skatelescope.org/event/539/overview</p>
RADIO.NET SUPPORT	<p>1100 EUR</p> <p>Comprising of:</p> <ul style="list-style-type: none"> - Approximately 750 EUR for flights - 200 EUR for hire car (Jodrell Bank Observatory is remote) - 200 EUR for subsistence - No accommodation required (parents live nearby)
OTHER SOURCES OF FUNDING	Other expenses covered by a personal South African Radio Astronomy Observatory (SARAO) fellowship travel allowance
REQUEST <i>(max. 2 pages)</i>	
Info about the TA user	<p>20 minute INVITED talk by the TA user at the SKA-VLBI conference. Information about the talk is given below.</p> <p><i>Title:</i> Wide-field VLBI surveys in the SKA-era</p> <p><i>Scientific summary:</i> Recent technological advances have enabled the mapping of the entire primary beam at VLBI resolutions. This has been used to cover multiple sources across 100s of degrees that is not permissible with conventional VLBI observations. These wide-field observations have provided valuable insights into a range of phenomena such as ISM scattering in nearby galaxies (Morgan+2013), AGN and supernovae activity in nearby galaxies (Rampadarath+2014, 2015) and deep-field radio AGN activity across cosmic time (Middelberg+2011, 2013; Herrera Ruiz+2017, 2018, Radcliffe+18).</p> <p>The SKA will provide a step-change in the sensitivity of VLBI arrays allowing even the faintest of sources to be investigated using VLBI. However, the use of tied-array beams (with relatively small field-of-views) could severely affect the ability to perform wide-field surveys.</p> <p>In this talk, I will summarise the scientific discoveries and benefits of wide-field VLBI surveys currently being conducted with the European VLBI Network (EVN), VLBA, e-</p>

	MERLIN, and the possible discoveries that could be found by incorporating the SKA in the global VLBI network. Utilising ongoing efforts with MeerKAT, I will show how different sub-arraying strategies could be used to successfully perform wide-field surveys of multiple sources within the primary beam using tied-array beams. This is key to the survival of wide-field VLBI surveys.
Use of RadioNet infrastructure	<p>This talk will use the latest results from RadioNet TA facilities including the following projects:</p> <p><i>European VLBI Network</i></p> <ul style="list-style-type: none"> EG078 (Co-PI w/ M. Garrett): Wide-field VLBI survey of GOODS-N (72hrs observations from Jun 2014 to Nov 2017). Published in Radcliffe+16 (DOI: 10.1051/0004-6361/201527980) and Radcliffe+18 (DOI: 10.1051/0004-6361/201833399) ER047 (PI): Disentangling AGN and star-formation in COSMOS (72hrs, observations from Nov 2018 – ongoing) <p><i>e-MERLIN</i></p> <ul style="list-style-type: none"> The e-MERLIN Galaxy Evolution Survey (Co-I; core/builder member; PI Muxlow). Observations from 2013-ongoing. First papers submitted (Muxlow+submitted)
Impact on RadioNet	<p>This event will present the latest results in the SKA high priority science areas where VLBI will make an impact. We will discuss ideas and possible strategies for major SKA-VLBI Key Science observing programmes, and the impact of global VLBI observations for astronomical research in the future in general. This includes the role of RadioNet supported instruments such as the EVN and e-MERLIN. In addition, we will seek input regarding the SKA-VLBI requirements for the future SKA Regional Centres which may be supported by future iterations of RadioNet.</p> <p>The talk given by the applicant will be key in conveying ways to incorporate the SKA into global VLBI networks across the world. The conference will facilitate discussions and ideas on the role of the EVN, e-MERLIN and the AVN in the SKA Key Science Areas. In addition, this conference will provide future collaborative efforts between VLBI groups across multiple institutions, thus improving scientific output using RadioNet supported infrastructure.</p>
<p>Privacy Policy: With signing this template and applying for RadioNet funding, I accept the <u>Privacy Policy of RadioNet</u>, which is based on the EU General Data Protection Regulation (GDPR).</p>	
Place & Date:	Signature of the applicant:
Manchester - 17/06/2019	