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Radio Astronomy at High Angular Resolution

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Abstract content
   (Max 300 words)

Radio astronomy at centimetre wavelengths has traditionally operated in three different regimes: low resolution (arc minutes) with single dish telescopes; medium to high resolution (arc seconds) with connected arrays of radio telescopes at separations of 1 to ~100 km; highest resolution (milli-arc seconds) with telescopes separated by thousands of kilometres. Modern technology means that telescopes thousands of kilometres apart are now regularly connected in real time to produce high resolution imaging with immediate output - the telescopes operate as a connected array. This technique is known as e-VLBI, where VLBI stands for Very Long Baseline Interferometry. The Hartebeesthoek 26m radio telescope has long operated as part of the European VLBI Network and the Australia Telescope Long Baseline Array, and we expect the KAT-7 array to achieve this capability before year end. HartRAO now carries out e-VLBI frequently with the EVN and AT-LBA.

This opens up new opportunities for investigating bright, compact radio sources by VLBI, for example as targets of opportunity triggered by sudden events such as a Gamma-ray flare, an outburst in a maser in a star-forming region, or a core-collapse supernova occurring. This talk will show examples of the types of objects being studied by VLBI, and the science that is being done with this high angular resolution technique.

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No

Level for award
 (Hons, MSc,
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N/A

Main supervisor (name and email)
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yes

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