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Observing with sibling and twin telescopes

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Content :

With the transition to VGOS, co-located radio telescopes will be common at many sites. This can be as a sibling telescope, when a VGOS antenna is built next to a legacy one or as the concept of a twin telescope, with two identical VGOS antennas. The co-location of two antennas offers new possibilities in both operation and analysis. The immediate question for observing with a sibling/twin telescope is the applied observing strategy and its realisation in the scheduling software. In this contribution we report about our efforts implementing new scheduling modes for sibling and twin telescopes in the Vienna VLBI Software. On the example of the sibling telescope in Hobart, several types of sessions will be discussed: scheduling redundant observations observing in identical scans, improved troposphere solution through observations in different directions, improved antenna sensitivity through adding the legacy antenna for observations to weak sources, or sessions dedicated to determine the local baseline. Results from sibling experiments, applying new analysis strategies combining common parameters, will further demonstrate the potential of twin telescopes for VGOS.

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