

Calibration of a 22GHz Receiver on the 26m Hartebeesthoek Radio telescope



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Abstract

We use a load at an ambient temperature of $290K$ and the sky at the Zenith to calibrate a radio telescope receiver at $22GHz$, a frequency at which the effect of atmospheric water vapour is a maximum. We evaluate the current absorption models and adopt the most suitable model for our location. Application of our results shows that a well defined relationship exists between the dish aperture efficiency, the angular diameter of the calibration source, the source hour angle and the source declination. We propose a plot of aperture efficiency versus hour angle as another standard way of studying dish deformation from perfect paraboloidal geometry in addition to that of aperture efficiency versus declination.

Section headings: -Theory of receiver calibration - The calibration procedure -Computation and estimation of parameters -The Results -Discussion -Conclusion and way forward.