

Fundamentals of Phase Calibration in Geodetic VLBI

Brian Corey

MIT Haystack Observatory

e-mail: `bcorey@haystack.mit.edu`

Abstract

An integral part of the RF hardware at a geodetic VLBI station is the pulse, or phase, calibration system, in which a train of short pulses generated coherently with respect to the station frequency standard is injected into the signal path in the receiver. By measuring the phases of different frequency tones of the calibration signal at baseband, the instrumental phase and group delays from the injection point to the VLBI recorder can be estimated. After a brief introduction to how the pulse train is generated, this paper focuses on (1) applications of the calibration data to correcting VLBI data for instrumental effects, and (2) pitfalls in the application of calibration data, including the ubiquitous spurious signals. A few illustrative case histories will be presented.