

METHODS OF PULSAR INJECTIONS INTO THE POWER SPECTRUM

REYNIER SQUILLACE

University of Virginia

Advisor: Scott Ransom

Abstract

The injection of artificial signals is a key tool in time-domain radio astronomy, with particular import to the study of pulsars and Fast Radio Bursts (FRBs). Both hardware and software injections can help probe observational biases impacting the detection of radio transients. Software injections in the time domain can, however, be computationally expensive. In the case of the CHIME All-sky Multiday Pulsar Stack Search (CHAMPSS), they are prohibitively so. We present methods for injecting artificial pulse signals into a decoherent power spectrum. The approaches detailed here are computationally negligible compared to the overhead of the CHAMPSS search pipeline, and can be broadly applied to any power spectrum search.