

Polyphase Filter Banks: A Physicist's Attempt

Matthew Cooper

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Abstract

This report was written for Dr. Dale Gary's Physics 728: Radio Astronomy as a class project, with the goal of explaining what polyphase filter banks are, how they work, and how they help us unlock the secrets of the universe by staring at pretty things in the sky.

It feels necessary to begin with the statement that my learning of electrical engineering has been a shooting gallery of interesting ideas. Thus, this project is both an attempt at filling in the necessary details one needs in order to understand what is really going on 'under the hood' of a polyphase filterbank system. I'm not sure how math heavy this is going to get, but I'll try to not do it just for my own fancy to save the reader a few calories.