

The project "Computer Aided Design (CAD) of Finite Impulse Response Windowed Digital Filters" presents to the user a flexible menu driven computer program whereby desired filter parameters can be specified and the characteristics of the designed filter obtained.

The CAD program is user interactive and validity checks are built in to ensure that input data or values calculated are within the capability of the program. In this project, the Lowpass, Highpass, Bandpass and Bandstop filters can be designed using eleven different types of windows.

This program was developed and tested on a 64K byte Apple 11e microcomputer and is written in "Applesoft Basic". Odd length windows were used and the maximum length of any filter designed is 1023 samples. However, to specify a filter length up to 1023 samples, the extended memory capability (an additional 64K bytes of memory) of the Apple 11e must be utilised to accommodate the running program and all resident operating systems.

This project shows that the Personal Computer can be successfully applied to the solution of digital signal processing problems, especially those involving the design of digital filters.

$$\sum_{n=-\infty}^{\infty} |h(n)| < \infty$$

is the filter's impulse response.

A digital filter to be causal or realisable the output at $n = n_0$ must be dependent only on values of the input for $n \leq n_0$. This