

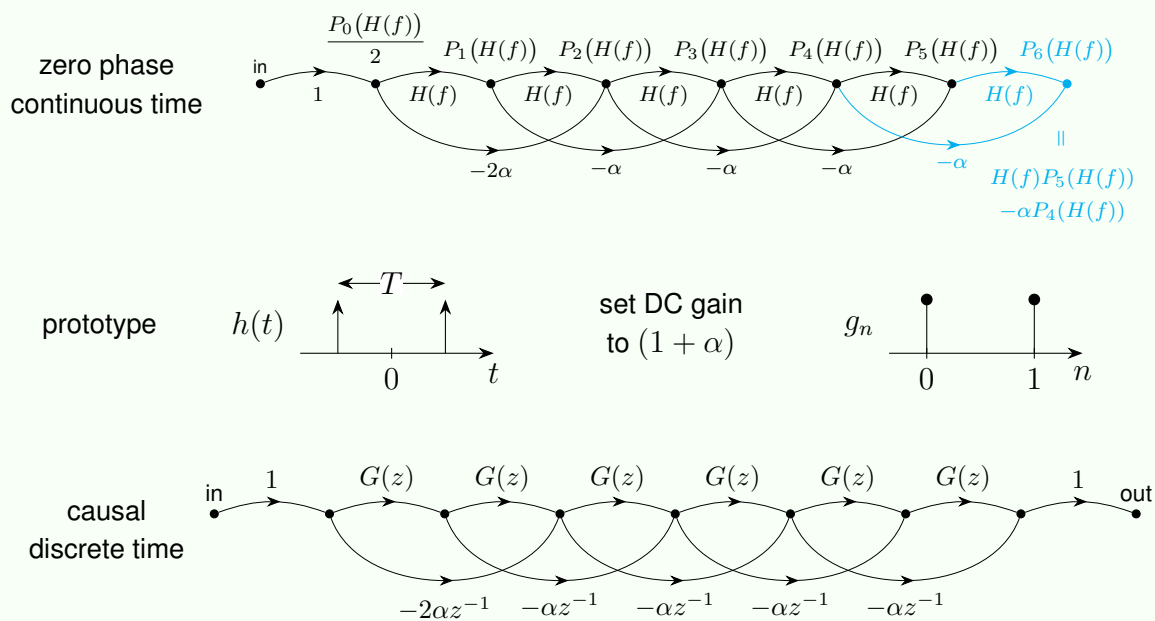
Equiripple-Stopband Multiplierless FIR Filters by Chebyshev Sharpening of Two-Sample Averaging

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<http://alum.mit.edu/www/jeffc>

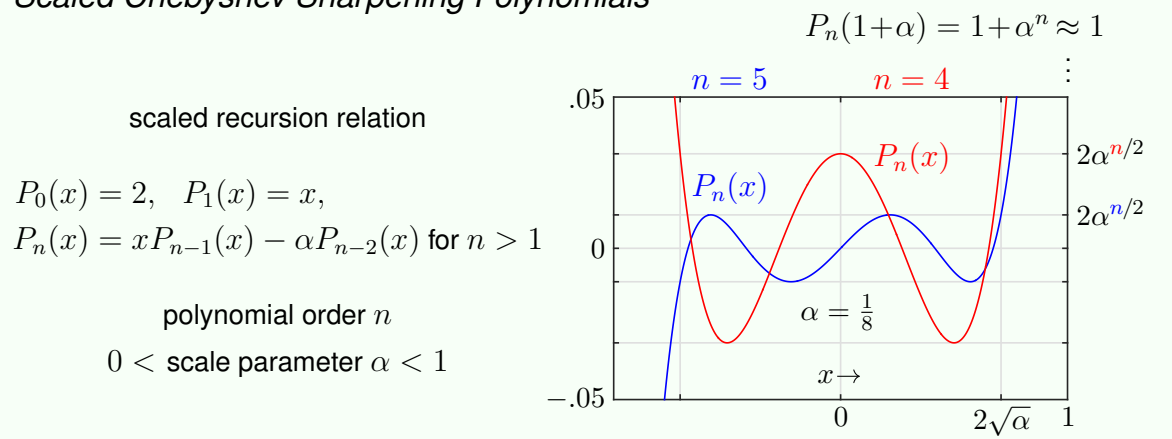
Sharpen Real $H(f)$ with $P_n(x)$ to Realize $P_n(H(f))$



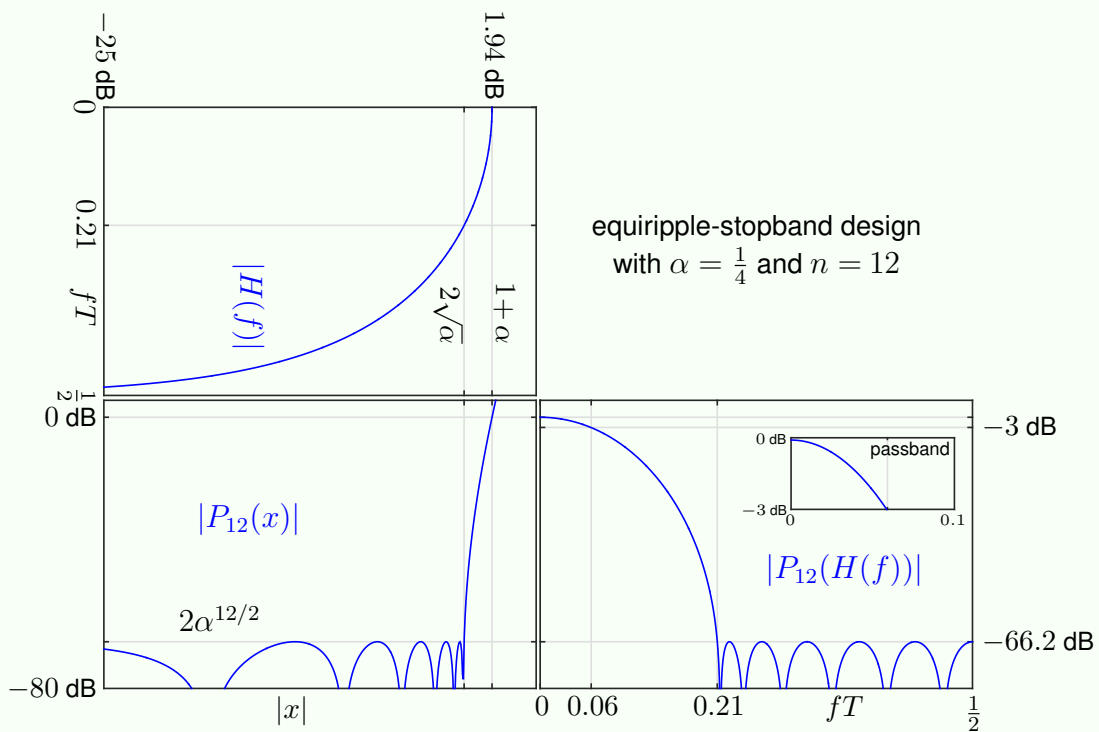
Limited frequency-response choices but

- **exactly equiripple** stopband (any depth)
- **multiplierless**: as few as **two additions times filter order**
- **optional passband flattening** at low computational cost
- **optional tree structure** for small decimation filters or antenna arrays

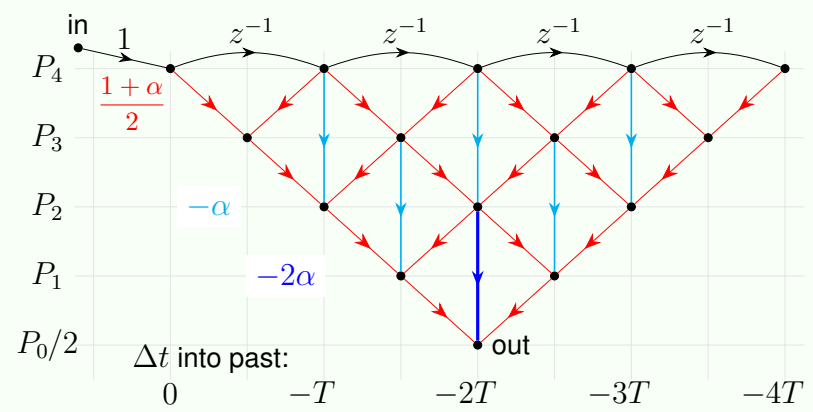
Scaled Chebyshev Sharpening Polynomials



An Equiripple Stopband Specified by α and n



Unroll in Time for Special Applications



Combine Polynomials to Flatten Passband

