

18.327/1.130: Wavelets, Filter Banks and Applications

Problem Set 2

Issued: SES #6

Due: SES #10

Matlab Exercise

Please submit your Matlab code and plots.

Develop a Matlab program to compute the spectral factors of a symmetric, positive definite filter (i.e., a filter whose Toeplitz matrix is symmetric and positive definite) using the Matlab root finding algorithm `roots`. Test your algorithm by using it to factor the degree 10 product filter to obtain the Daubechies 6-tap filter.

Textbook Problems

1. Problem Set 3.4, pp. 102. Problem 3.
2. Problem Set 4.2, pp. 121. Problems 1, 4 and 7.
3. Problem Set 4.3, pp. 126. Problems 2 and 17(b,c).
4. Problem Set 4.4, pp. 133. Problem 9.
5. Problem Set 5.2, pp. 152. Problems 2 and 4.
6. Problem Set 5.4, pp. 164. Problem 3.