

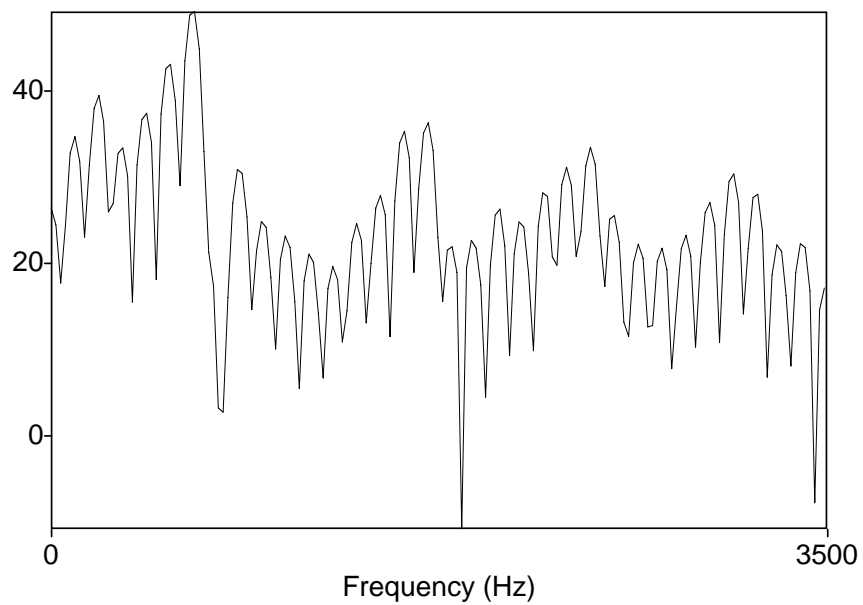
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24.963 Linguistic Phonetics  
Fall 2005

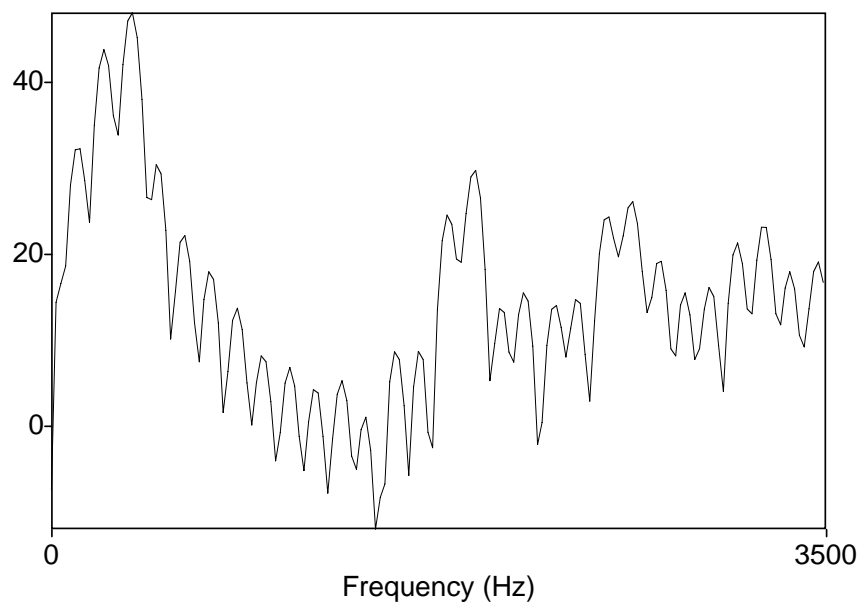
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# Spectral Analysis

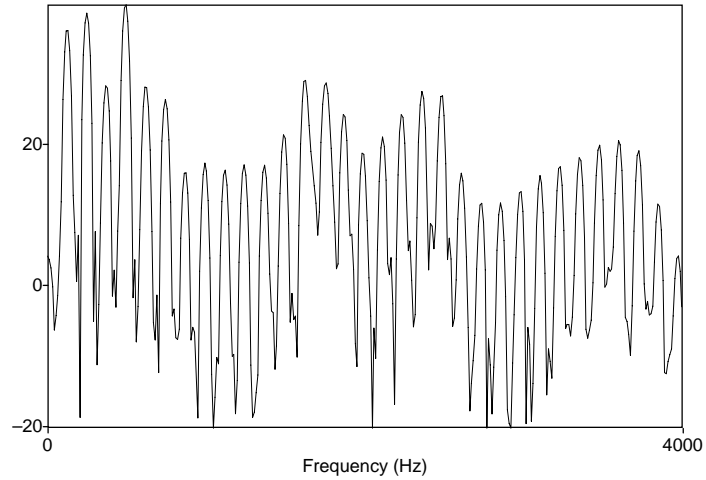
[æ]



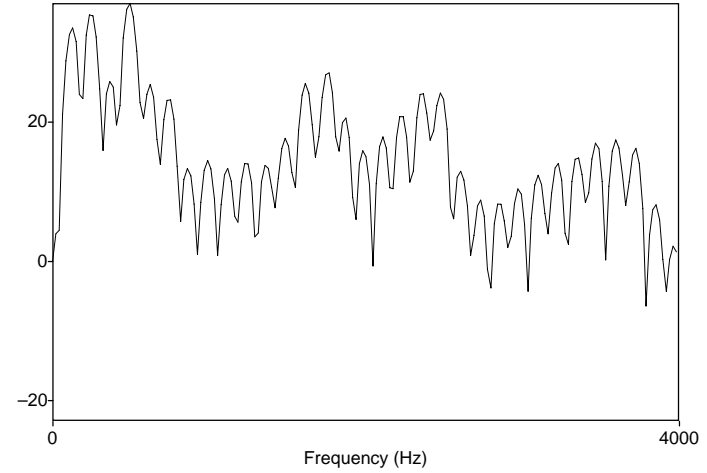
[ɪ]



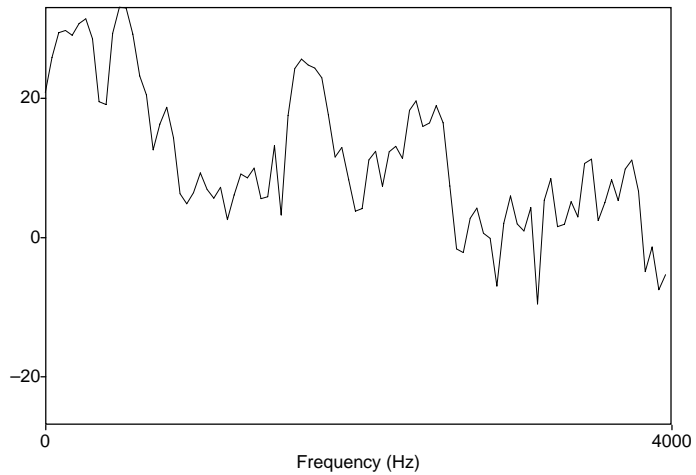
# DFT - window length



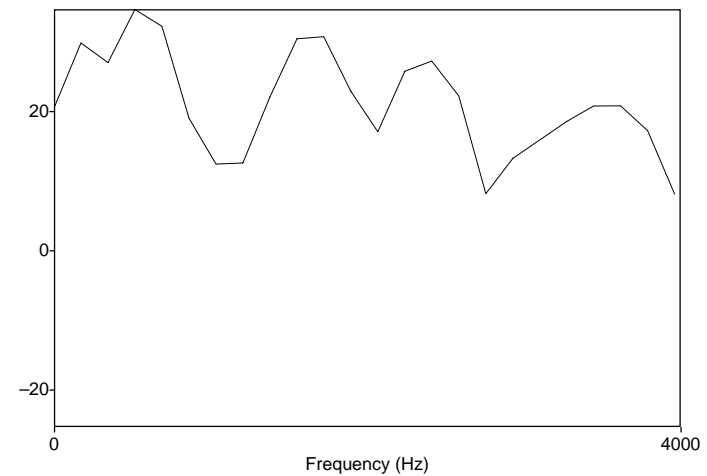
46 ms



23 ms



12 ms



5 ms

# Window function

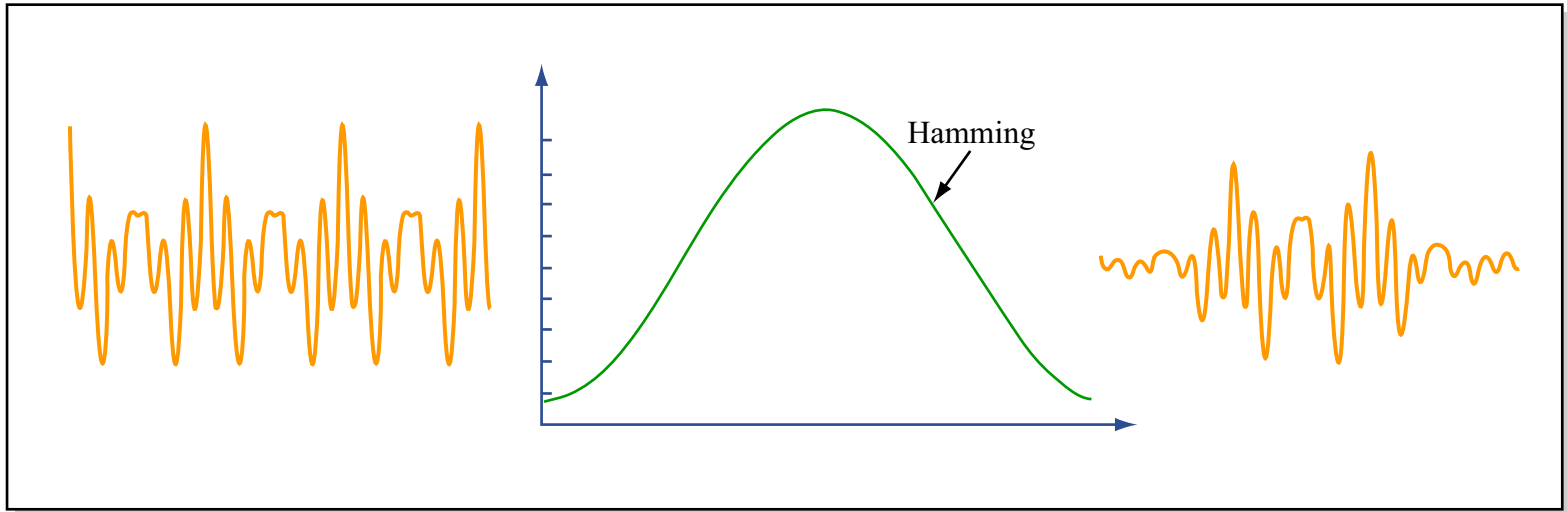


Image by MIT OpenCourseWare.

# Window function

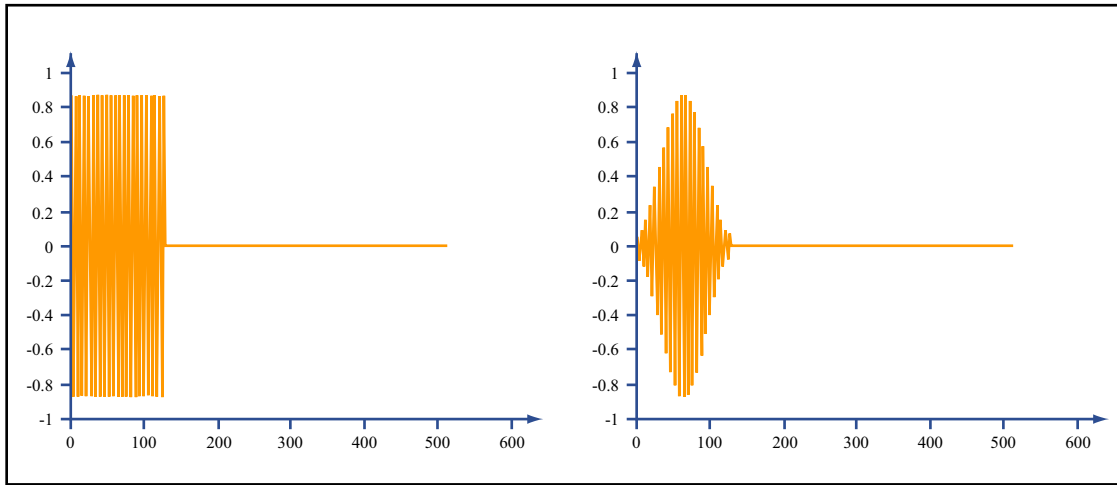


Image by MIT OpenCourseWare.

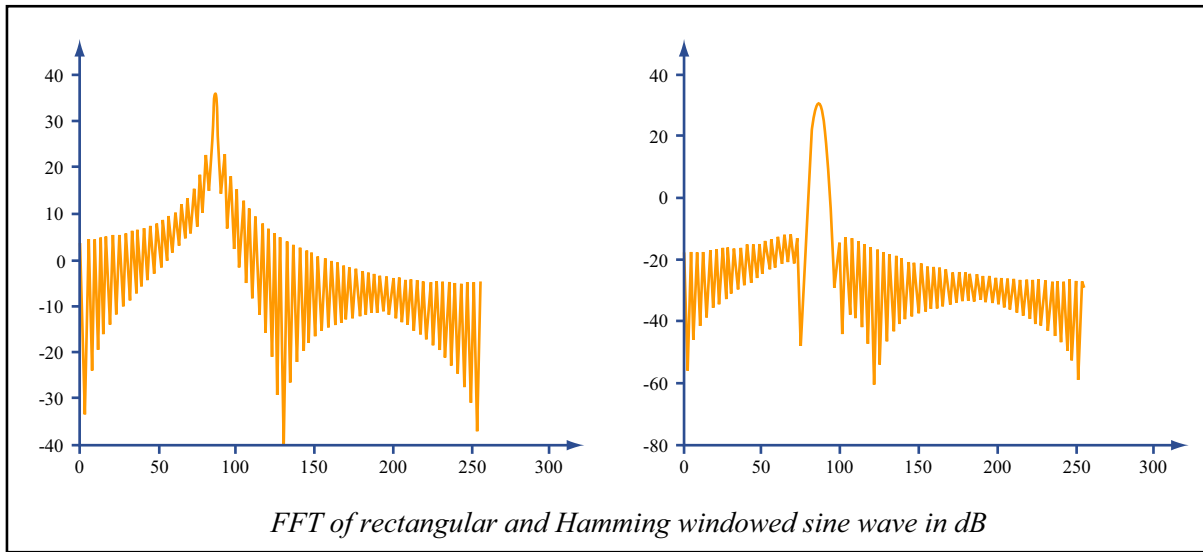


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# Source-Filter Model of Speech Production

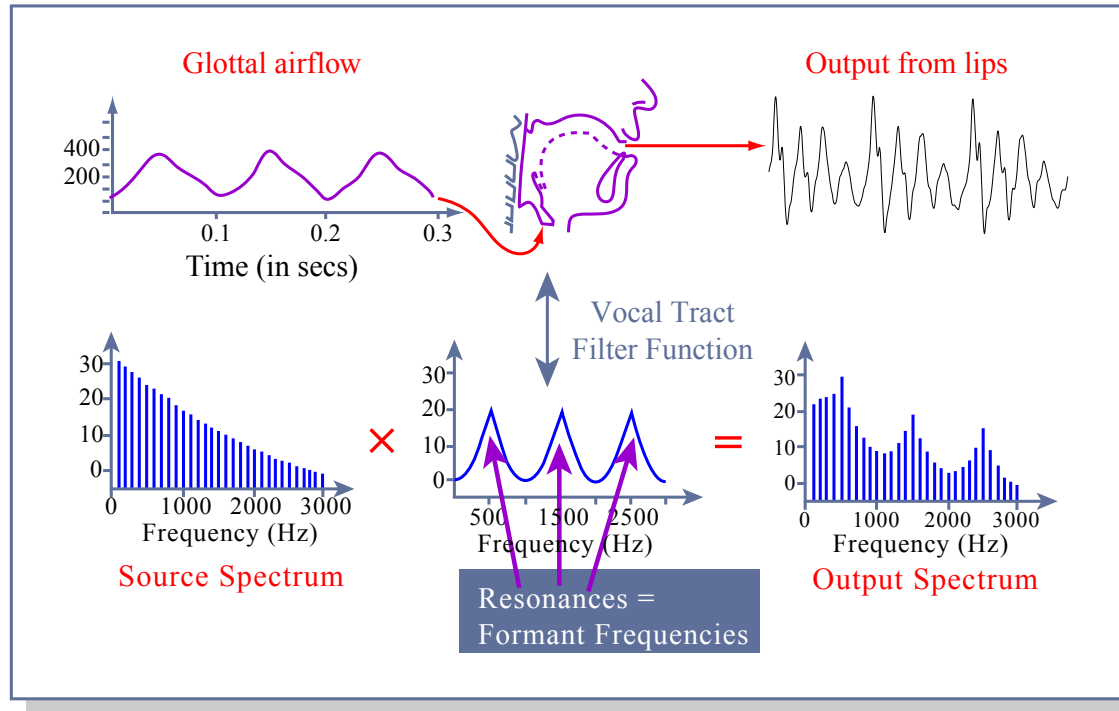


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# LPC - all-pole filter

$$s(n) = - \sum_{k=1}^N a_k s(n-k) + Gu(n)$$

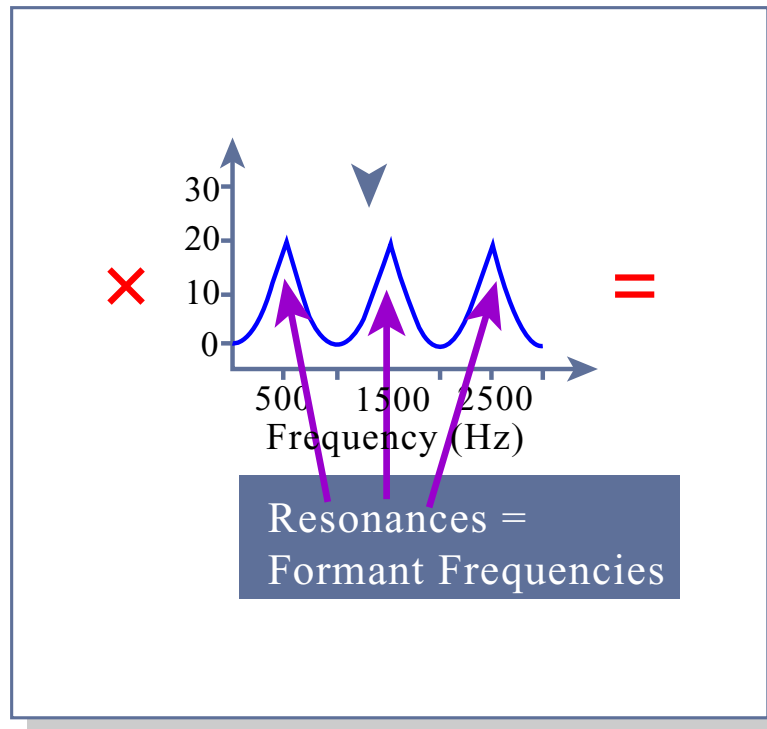
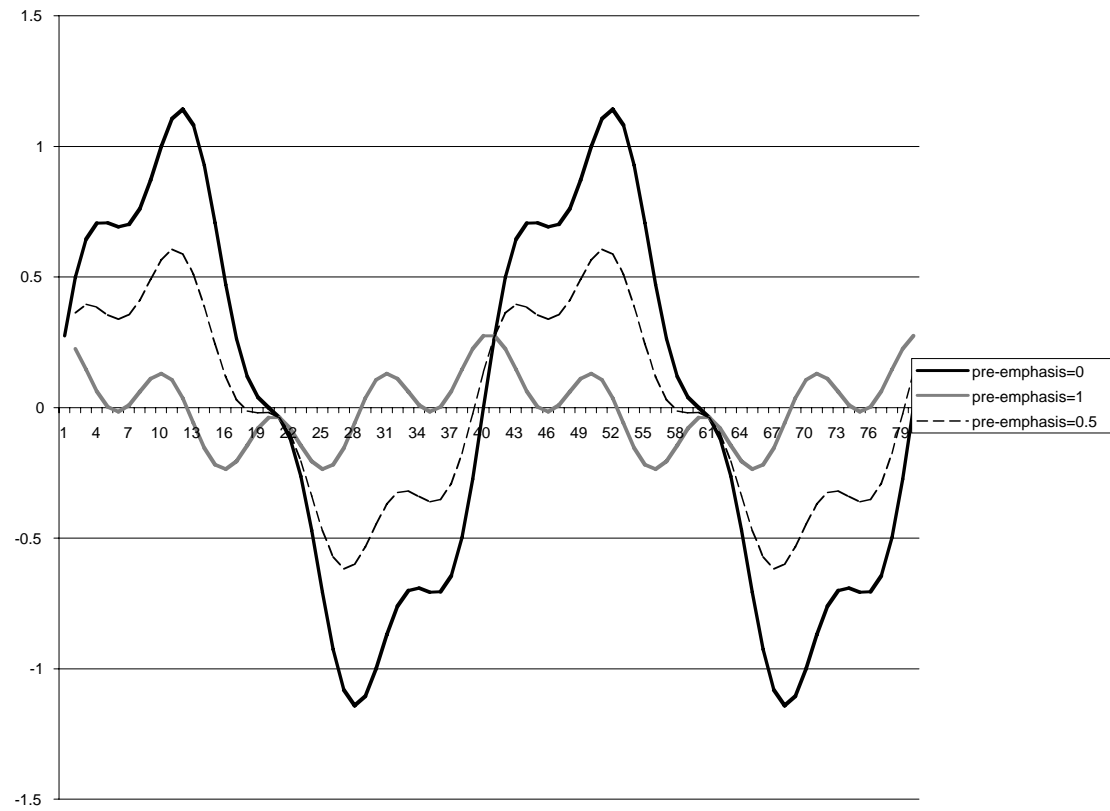


Image by MIT OpenCourseWare.

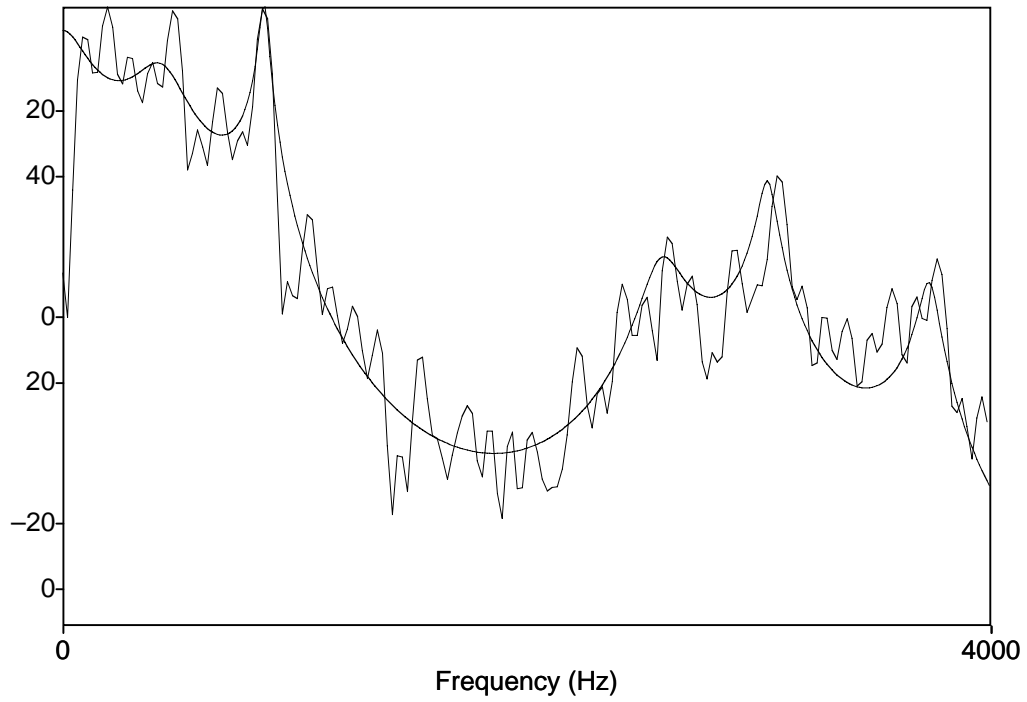
# Pre-emphasis

$$y(n) = s(n) - ps(n-1)$$

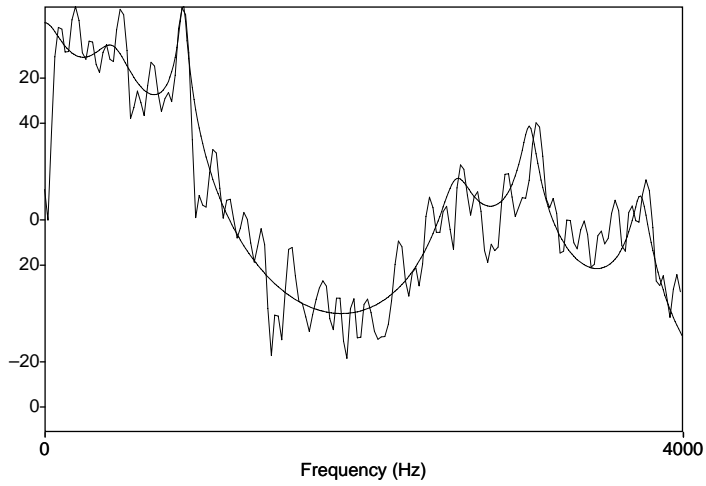




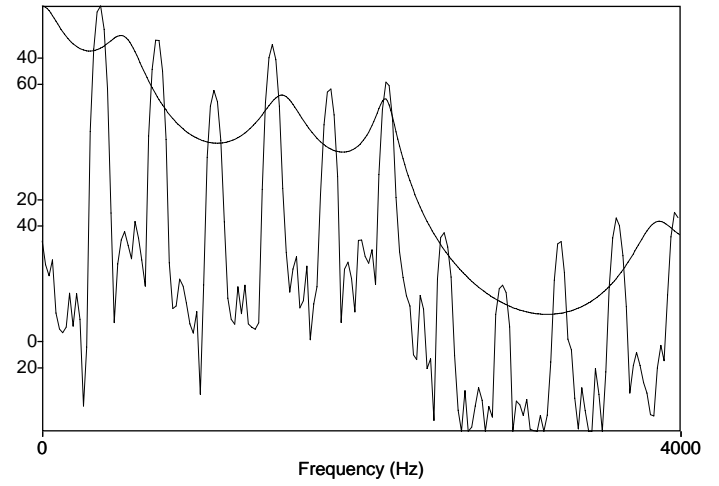
# LPC spectrum



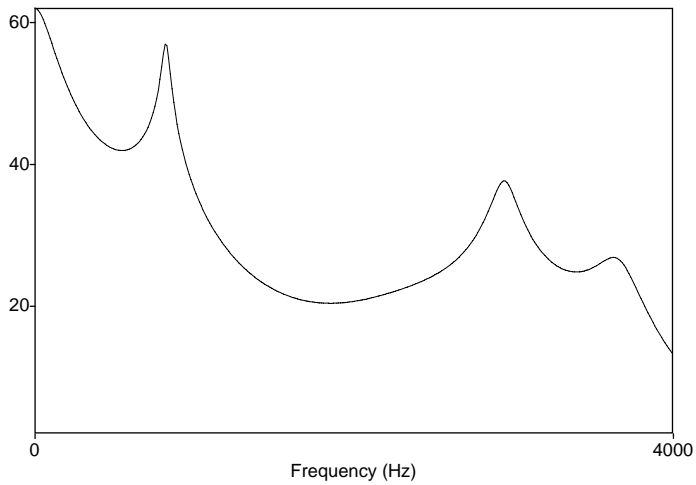
# LPC: filter order



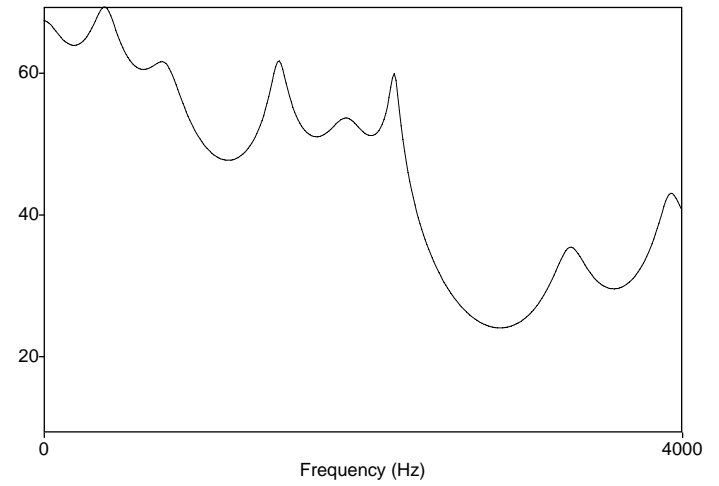
$N = 12$



$N = 12$



$N = 10$



$N = 18$