Filters using zeros
Filters using poles
Notch Filter Demo
New Problem - Resource Sharing

- Frequency Division Multiplexing Strategy
  - Represent each channel with a different frequency
    - For LTI systems, frequencies do not mix
      \[ x[n] = A_1 e^{j\Omega_1 n} + \ldots + A_K e^{j\Omega_K n} \]
      \[ y[n] = H(e^{j\Omega_1}) A_1 e^{j\Omega_1 n} + \ldots + H(e^{j\Omega_K}) A_K e^{j\Omega_K n} \]
    - Now need to separate the different frequencies
      - Use Filters to separate Y in to different channels
      - LTI systems with specific frequency responses
Channel 5, 8 Zeros Filter
Channel 4, 8-pair Zeros Filter
High Pass Filter, Two-pair Zeros
Low Pass Filter, Two-pair Zeros
One-pair Poles Bandpass Filter $r=0.9$
One-pair poles Bandpass Filter $r=0.98$
One pole-pair, two zero pairs LPF
One zero-pair notch filter
One Zero-pair, One Pole-pair Notch
Notch Unit Sample Response