

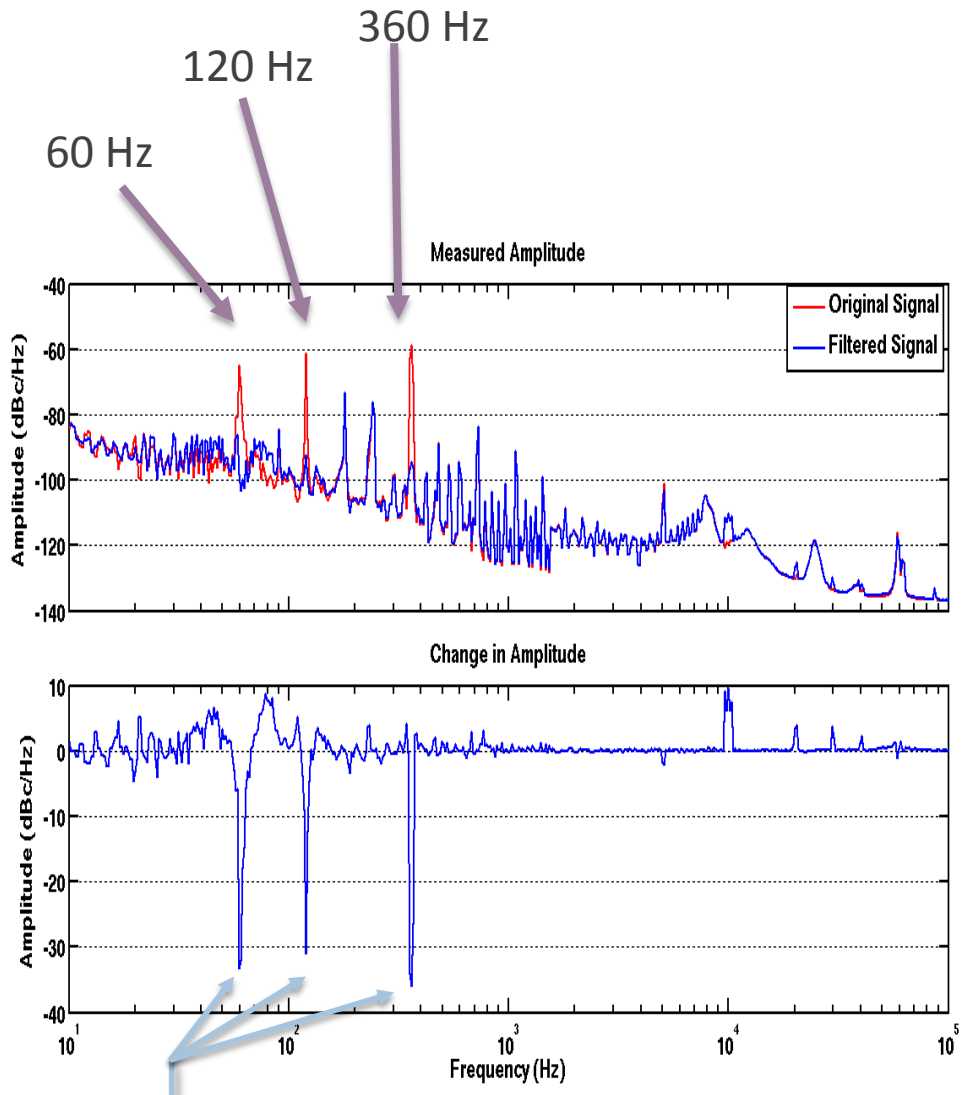
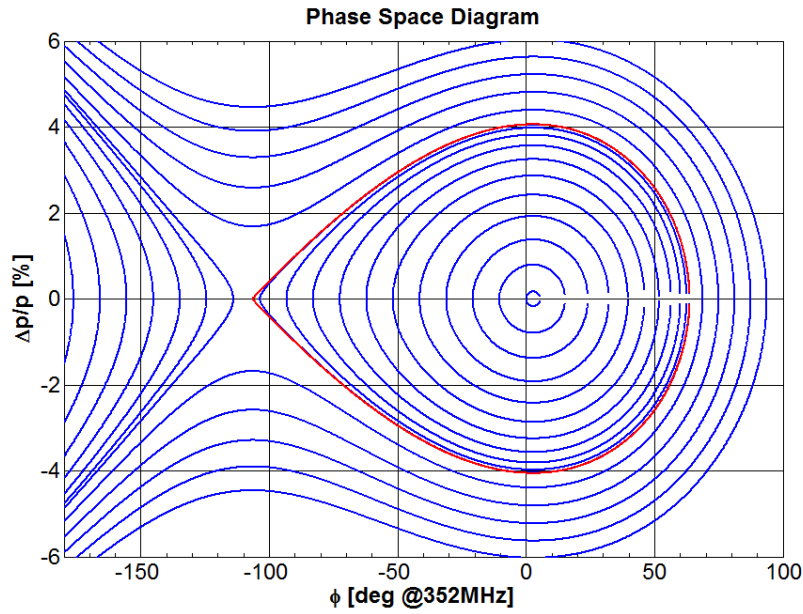
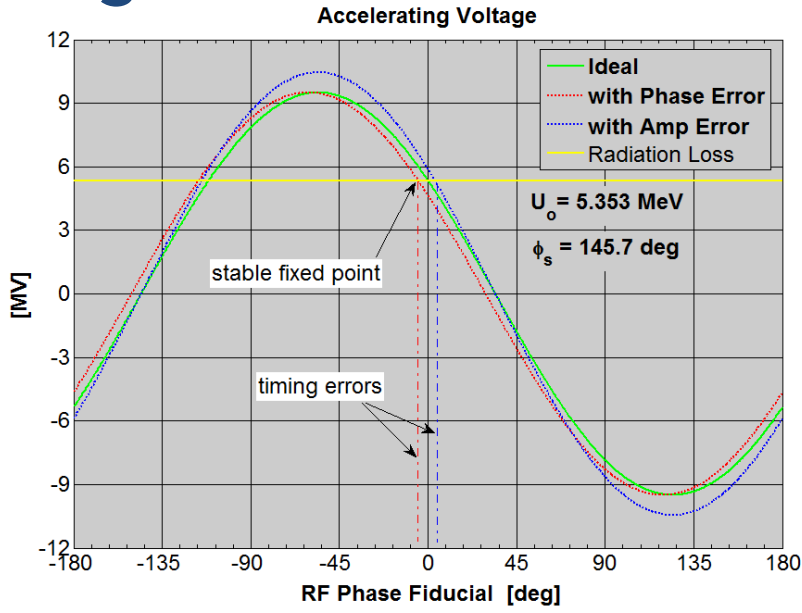
Stability Analysis of an Adaptive Notch Filter for RF Noise Suppression

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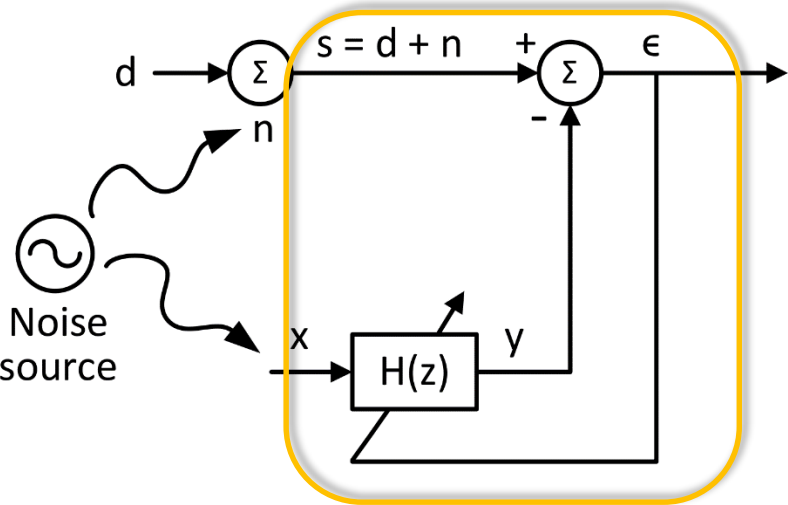
Mentor: Tim Berenc

Background



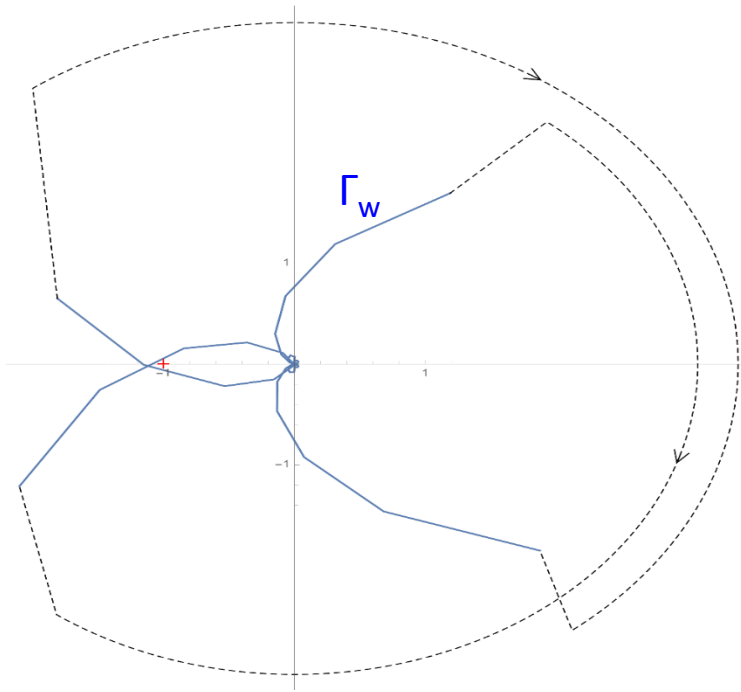
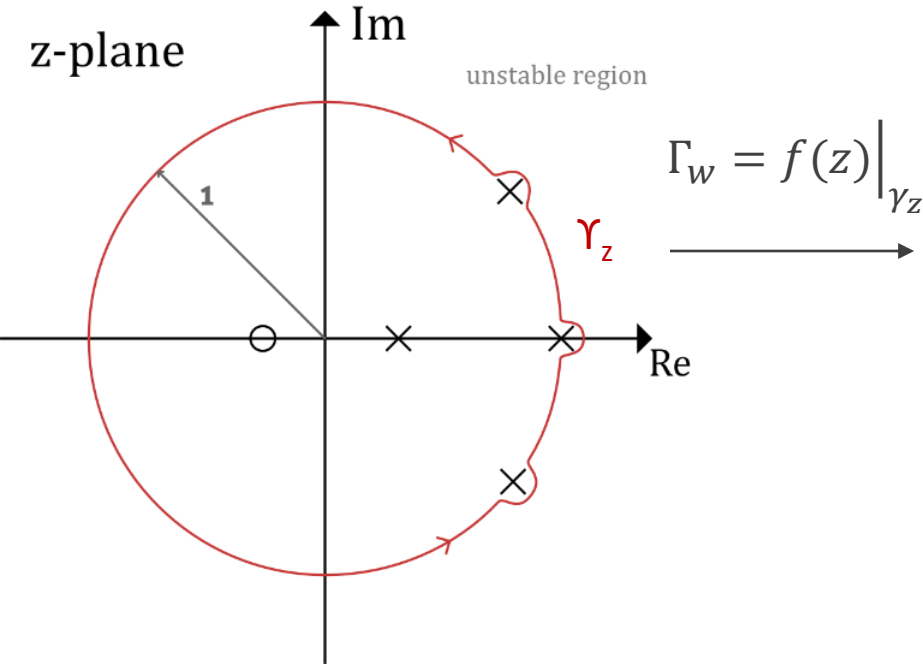
Reduced by ~30 dB

Stability Analysis



Nyquist stability criterion

- More powerful than Bode methods
 - handles systems with time delays and high order
- Derived from complex analysis techniques
 - # of times a mapped contour encircles of -1 determines stability



Goals

Develop an accurate model of the system

- Actual system consists of 400th order bandpass filters, external components, etc
- Characterize dynamics and gains of all elements
- Validate model through measurements
- Want users to have knob values that correspond to actual parameters
- Allows users to understand how far they are pushing the system
 - e.g., gain and phase margins

