

Interference Minimization in Nonlinear Systems

Analogical approach and non-linear models research

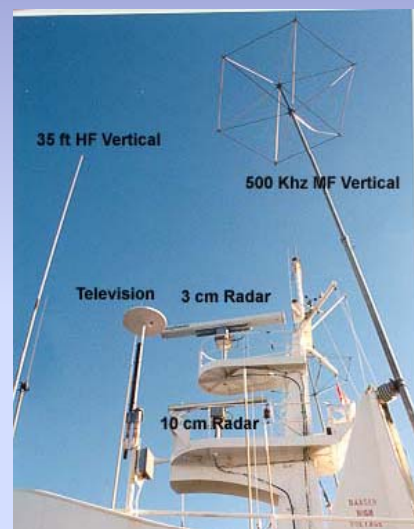
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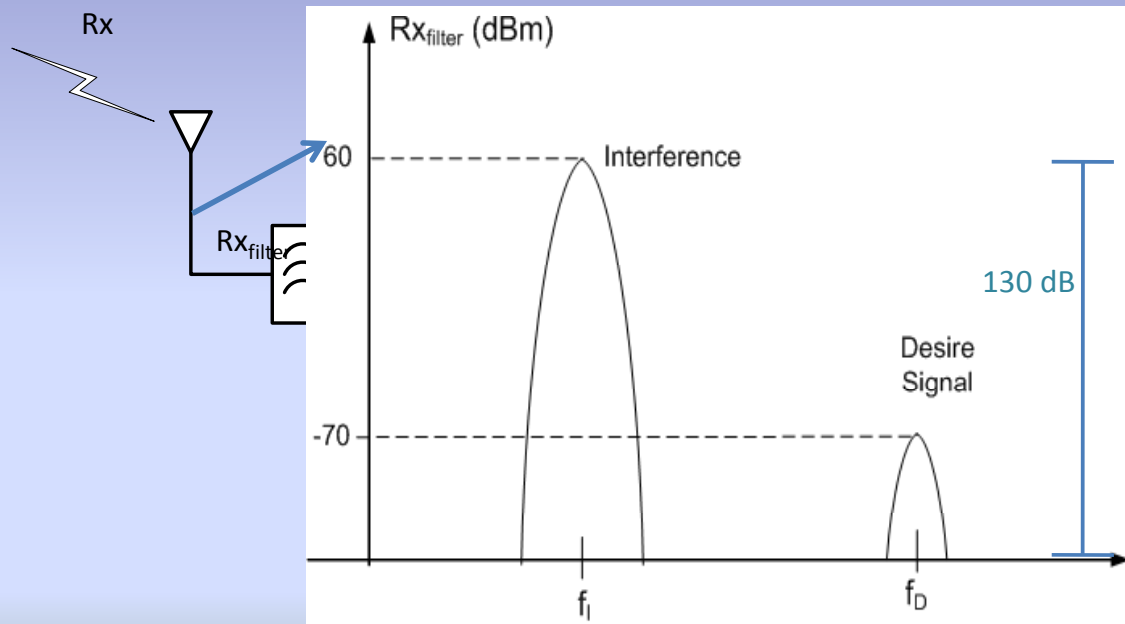
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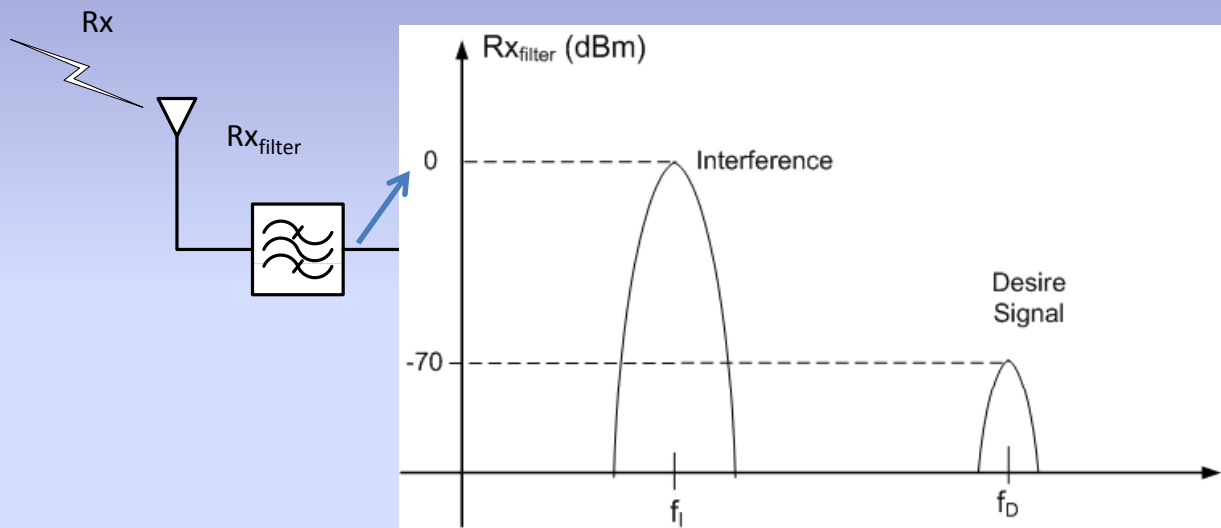
Real Scenario



Problem (1)

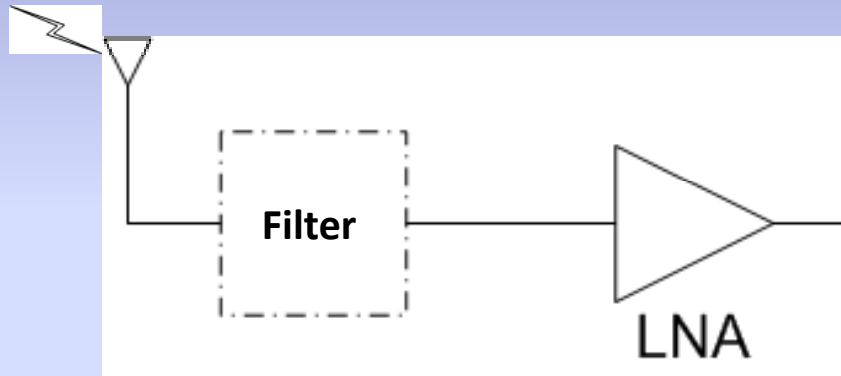


Problem (2)

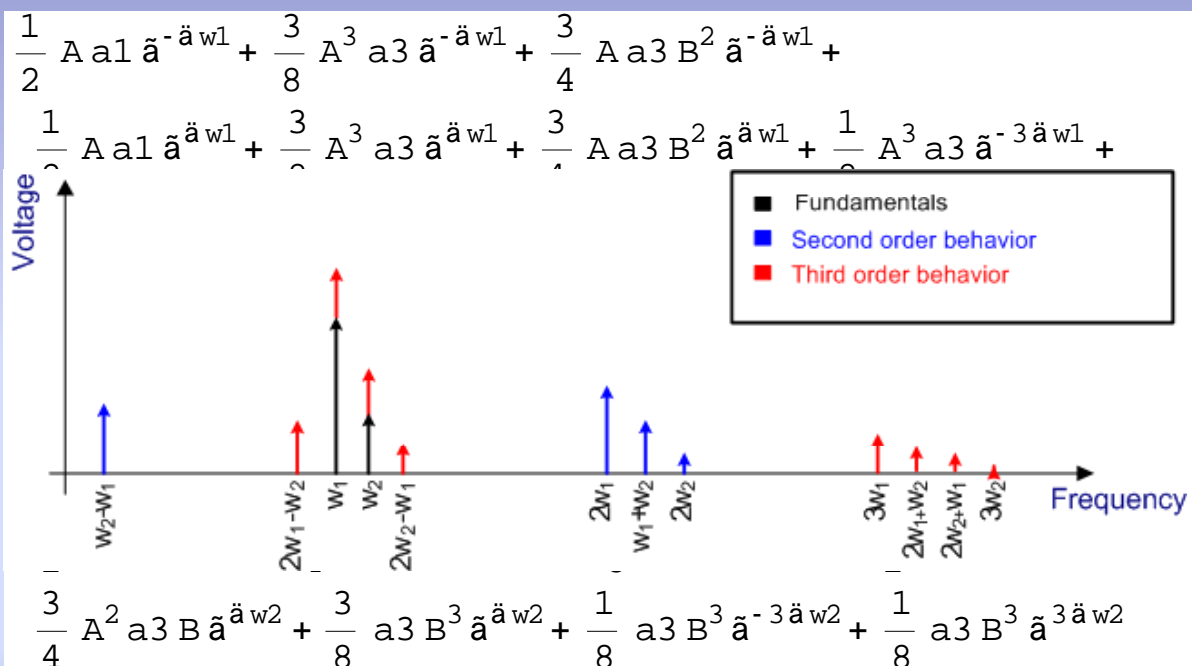


Problem (3)

$$A \cos(\omega_I) + B \cos(\omega_D)$$



Mathematical function



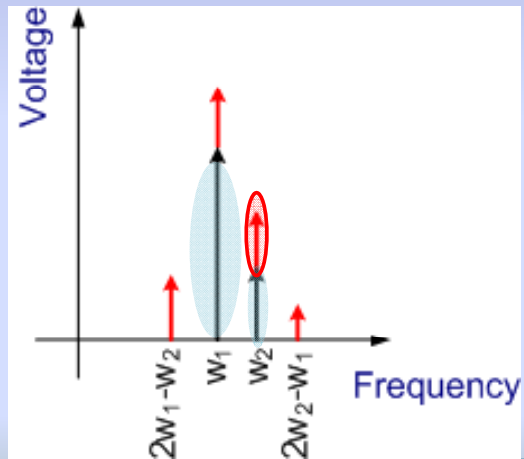
Important elements

$$\frac{1}{2} A a_1 \tilde{a}^{\omega_1} + \frac{3}{8} A^3 a_3 \tilde{a}^{\omega_1} + \frac{3}{4} A a_3 B^2 \tilde{a}^{\omega_1}$$

$$\frac{1}{2} a_1 B \tilde{a}^{\omega_2} + \frac{3}{4} A^2 a_3 B \tilde{a}^{\omega_2} + \frac{3}{8} a_3 B^3 \tilde{a}^{\omega_2}$$

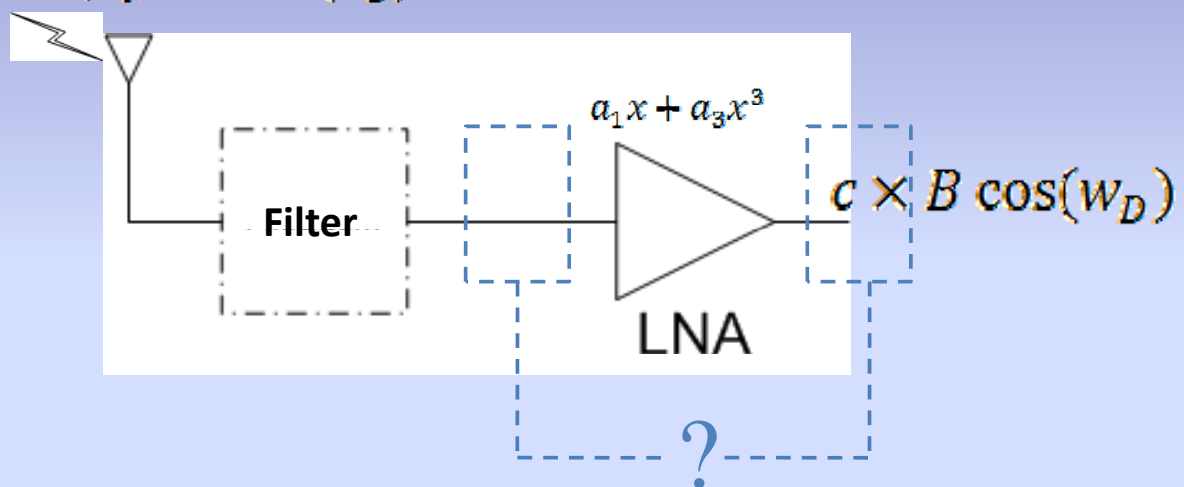
$$\frac{3}{8} A^2 a_3 B \tilde{a}^{2\omega_1 - \omega_2}$$

$$\frac{3}{8} A a_3 B^2 \tilde{a}^{-\omega_1 + 2\omega_2}$$



Goal

$$A \cos(\omega_I) + B \cos(\omega_D)$$



Nonlinear Model Needs

- Nonlinear models extracted for different two-tone amplitudes
- Models optimized for multi-carrier analyses
- LSNA extraction is a good solution?
- Study of co-channel distortion is a fundamental need in this scenario

Future Work

- Research of configuration to this problem
- Simulations tests
- Research for measurements models to validate results

Thank you

