

# Experimental demonstration of squeezing in a PR Interferometer

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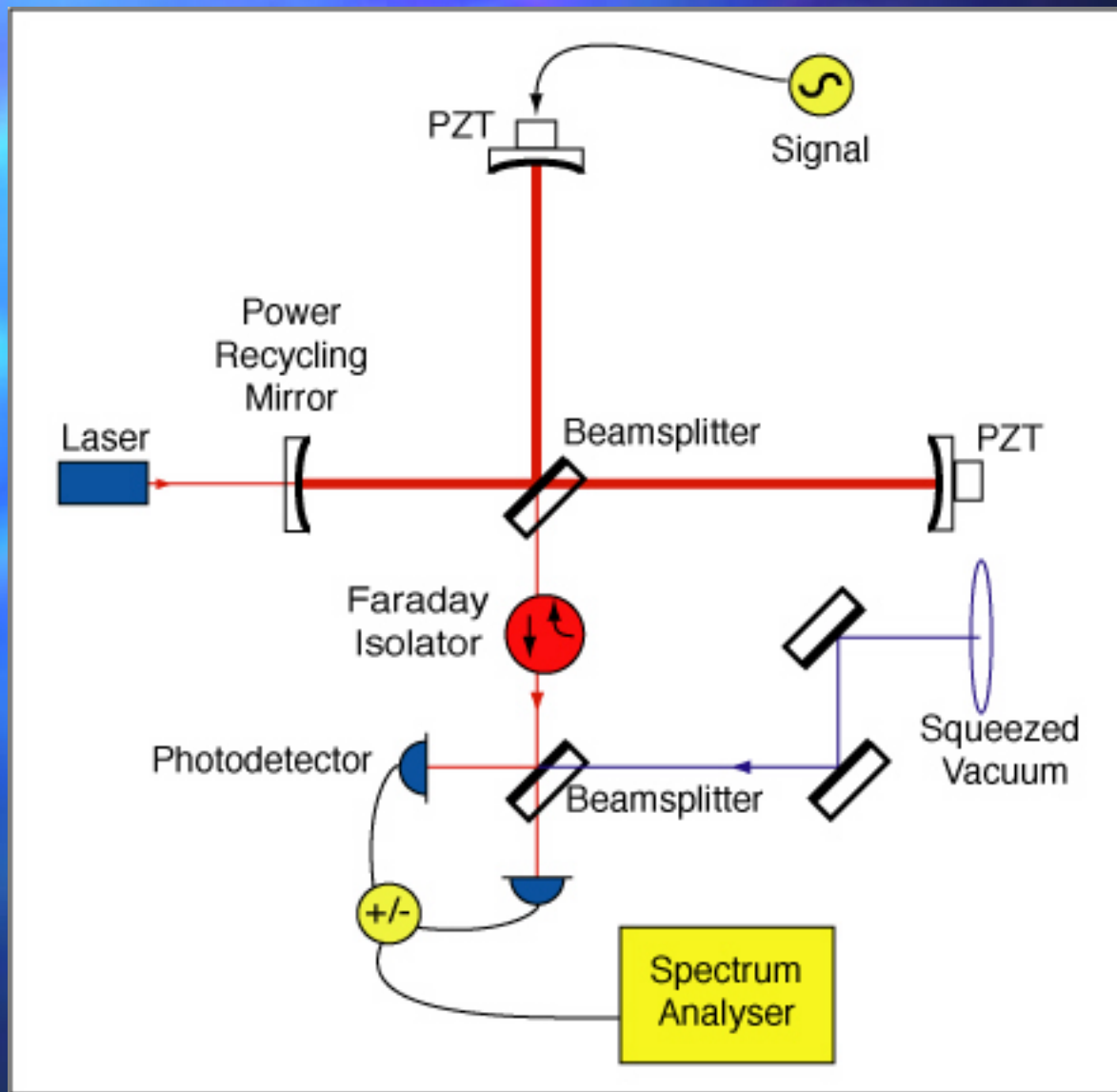


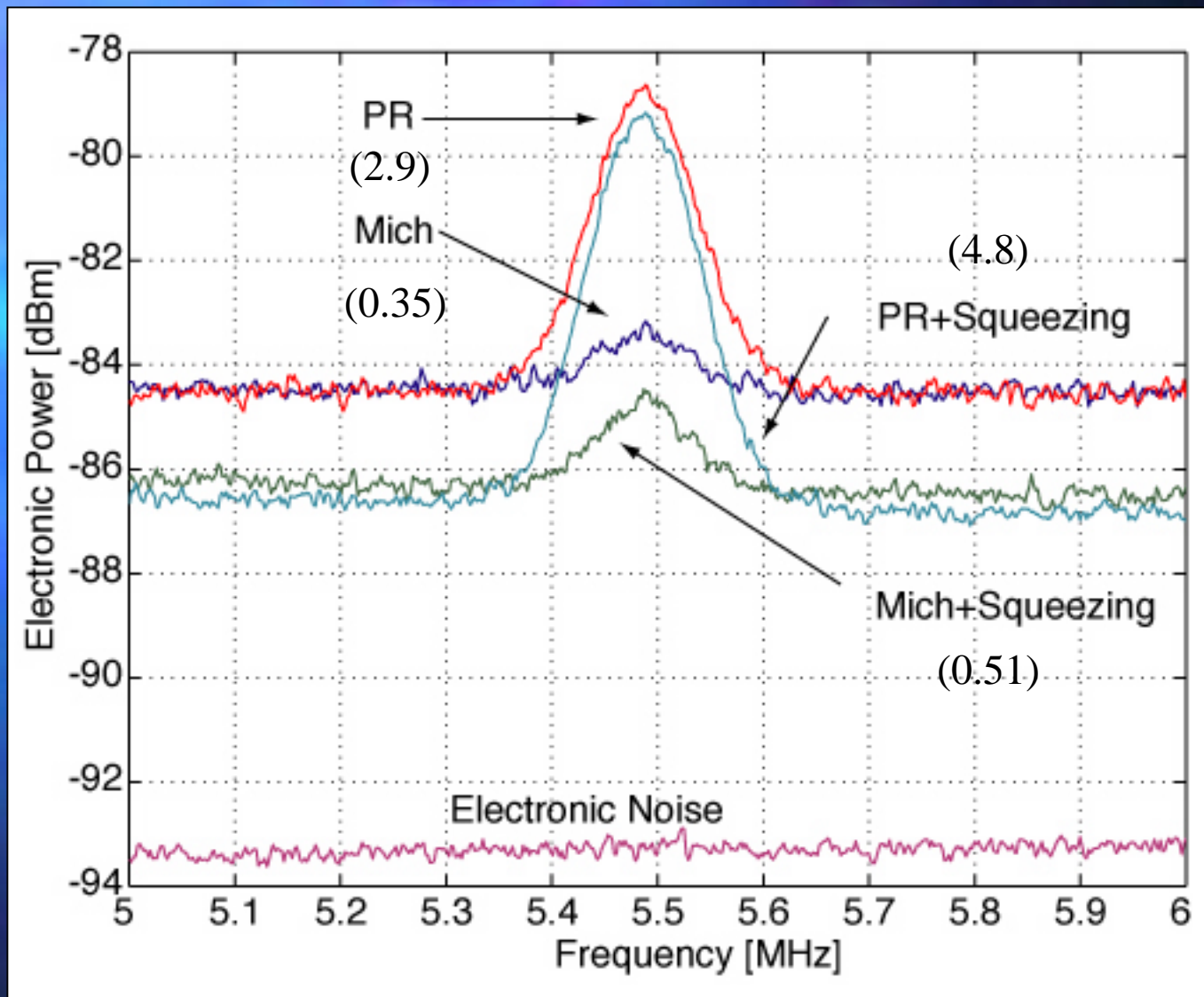
# Squeezing and GW detectors

- Early theoretical work by Braginsky and Caves ~ 1980
- A few demonstrations on simple interferometers eg Mach Zehnder [1] and polarimeter [2] ~1987
- In the last few years there has been a revival of interest in squeezing in the GW community as LIGO II is expected to be radiation pressure noise limited (at low frequencies).

[1] M. Xiao, L.-A. Wu and H.J. Kimble, Phys. Rev Lett. 59 (1987)

[2] P. Grangier, R.E. Slusher, B. Yurke and A. LaPorta, Phys. Rev. Lett. 59 (1987)





# Squeezing Applicability

- Realistic (sub)configuration
- Advanced LIGO signal extraction method (offset locking)
- All at 1064nm
- Low frequency squeezing should not be a problem with GW detector
- Interferometer and squeezing LOCKED
- Results limited by losses in our isolator~15%
- But isolator loss less than 0.5% achievable!