

# Thermal noise limit

## Parameters needed for thermal noise calculation

| Description                  | Material     | Parameter name | Value                                                                     | Comment                    |
|------------------------------|--------------|----------------|---------------------------------------------------------------------------|----------------------------|
| Boltzmann constant           |              | $k_b$          | $1.38064852 \times 10^{-23} \text{ m}^2 \text{ kg s}^{-2} \text{ K}^{-1}$ |                            |
| Temperature (K)              |              | $T$            | 300                                                                       |                            |
| Poisson Ratio of substrate   | Fused Silica | $\sigma_{sb}$  | 0.16                                                                      | Fused Silica substrtae [1] |
| Poisson Ratio of coating     | AlGaAs       | $\sigma_c$     | 0.32                                                                      | AlGaAs coating [2]         |
| Young's modulus of substrate | Fused Silica | $E_{sb}$       | 72.7 Gpa                                                                  | Fused Silica substrtae [1] |

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