Thermal noise limit

Parameters needed for thermal noise calculation

Description	Material	Parameter name	Value	Comment	
Boltzmann constant		kb	1.38064852 × 10-23 m2 kg s-2 K-1		
Temperature (K)		T	300		
Poisson Ratio of substrate	Fused Silica	σ_{sb}	0.16	Fused Silica substrtae [1]	
Poisson Ratio of coating	AlGaAs	σ_{c}	0.32	AlGaAs coating [2]	
Young's modulus of substrate	Fused Silica	E_{sb}	72.7 Gpa	Fused Silica substrtae [1]	
Young's modulus of spacer	ULE	E_{sp}	67.6 Gpa	ULE Spacer [1]	
Young's modulus of coating	AlGaAs	E_{c}	100 Gpa	AlGaAs coating [2]	
Length of cavity		L	0.48 m	Sr Beast [3]	
Spacer radius		R_{sp}	0.045 m	Sr Beast [3]	
Central bore radius of spacer		r_{sp}	0.0065 m	Sebastian Häfner Thesis page 83	
Thickness of coating	AlGaAs	D	6.83*10	**-6 m**	AlGaAs coating [2]
1/e	**2 mode radius on the mirror**			0.000488 m for Mirror 1 0.000677 m for Mirror 2	