Data

| SensibilityCoeficientsVariables	SensibilityCoeficients	Evaluation
0 P	lambda/(2*L_0*(T - T_0))	0.000000083125
1 lambda	P/(2*L_0*(T - T_0))	19.53125
2 L_0	-P*lambda/(2*L_0**2*(T - T_0))	-0.0001298828125
3 T	-P*lambda/(2*L_0*(T - T_0)**2)	-0.000000259765625
4 T_0	P*lambda/(2*L_0*(T - T_0)**2)	0.000000259765625
5 P, P	0	0
6 P, lambda	0.125/(L_0**2*(T - T_0)**2)	0.01220703125
7 P, L_0	0.625*lambda**2/(L_0**4*(T - T_0)**2)	2.69912719726563E-12
8 P, T	0.625*lambda**2/(L_0**2*(T - T_0)**4)	1.07965087890625E-17
9 P, T_0	0.625*lambda**2/(L_0**2*(T - T_0)**4)	1.07965087890625E-17
10 lambda, P	0.125/(L_0**2*(T - T_0)**2)	0.01220703125
11 lambda, lambda	0	0
12 lambda, L_0	0.625*P**2/(L_0**4*(T - T_0)**2)	149011.611938477
13 lambda, T	0.625*P**2/(L_0**2*(T - T_0)**4)	0.596046447753906
14 lambda, T_0	0.625*P**2/(L_0**2*(T - T_0)**4)	0.596046447753906
15 L_0, P	0.125*lambda**2/(L_0**4*(T - T_0)**2)	5.39825439453125E-13
16 L_0, lambda	0.125*P**2/(L_0**4*(T - T_0)**2)	29802.3223876953
17 L_0, L_0	2.0*P**2*lambda**2/(L_0**6*(T - T_0)**2)	2.10869312286377E-05
18 L_0, T	0.625*P**2*lambda**2/(L_0**4*(T - T_0)**4)	2.63586640357971E-11
19 L_0, T_0	0.625*P**2*lambda**2/(L_0**4*(T - T_0)**4)	2.63586640357971E-11
20 T, P	0.125*lambda**2/(L_0**2*(T - T_0)**4)	2.1593017578125E-18
21 T, lambda	0.125*P**2/(L_0**2*(T - T_0)**4)	0.119209289550781
22 T, L_0	0.625*P**2*lambda**2/(L_0**4*(T - T_0)**4)	2.63586640357971E-11
23 T, T	2.0*P**2*lambda**2/(L_0**2*(T - T_0)**6)	3.37390899658203E-16
24 T, T_0	2.0*P**2*lambda**2/(L_0**2*(T - T_0)**6)	3.37390899658203E-16
25 T_0, P	0.125*lambda**2/(L_0**2*(T - T_0)**4)	2.1593017578125E-18
26 T_0, lambda	0.125*P**2/(L_0**2*(T - T_0)**4)	0.119209289550781
27 T_0, L_0	0.625*P**2*lambda**2/(L_0**4*(T - T_0)**4)	2.63586640357971E-11
28 T_0, T	2.0*P**2*lambda**2/(L_0**2*(T - T_0)**6)	3.37390899658203E-16
29 T_0, T_0	2.0*P**2*lambda**2/(L_0**2*(T - T_0)**6)	3.37390899658203E-16

Terms	Contributions
2.30E-15	4.79922411263876E-08
3.18E-15	5.63818622255494E-08
1.41E-17	3.74939383799903E-09
5.62E-15	7.49878767599807E-08
5.62E-15	7.49878767599807E-08
0.00E+00	0
3.39E-20	1.84142390933997E-10
7.50E-22	2.73817010939059E-11
3.00E-19	5.47634021878118E-10
3.00E-19	5.47634021878118E-10
3.39E-20	1.84142390933997E-10
0.00E+00	0
1.03E-21	3.21683518490437E-11
4.14E-19	6.43367036980871E-10
4.14E-19	6.43367036980871E-10
1.50E-22	1.22454689971108E-11
2.07E-22	1.43861242917185E-11
1.46E-23	3.82670906159712E-12
1.83E-21	4.2783907959228E-11
1.83E-21	4.2783907959228E-11
6.00E-20	2.44909379942216E-10
8.28E-20	2.8772248583437E-10
1.83E-21	4.2783907959228E-11
2.34E-18	1.53068362463885E-09
2.34E-18	1.53068362463885E-09
6.00E-20	2.44909379942216E-10
8.28E-20	2.8772248583437E-10
1.83E-21	4.2783907959228E-11
2.34E-18	1.53068362463885E-09
2.34E-18	1.53068362463885E-09

Weights

SensibilityCoeficientsVariables	Contributions	Acumulated Percentage
T	7.4987876759981E-08	57.93%
T_0	7.4987876759981E-08	81.93%
λ	5.6381862225549E-08	92.79%
P	4.7992241126388E-08	99.92%
L_0	3.749393837999E-09	99.97%
T, T	1.5306836246389E-09	99.97%
T, T_0	1.5306836246389E-09	99.98%
T_0, T	1.5306836246389E-09	99.99%
T_0, T_0	1.5306836246389E-09	99.99%
λ, T	6.4336703698087E-10	100.00%
λ, T_0	6.4336703698087E-10	100.00%
P, T	5.4763402187812E-10	100.00%
P, T_0	5.4763402187812E-10	100.00%
T, λ	2.8772248583437E-10	100.00%
T_0, λ	2.8772248583437E-10	100.00%
T, P	2.4490937994222E-10	100.00%
T_0, P	2.4490937994222E-10	100.00%
P, λ	1.84142390934E-10	100.00%
λ, P	1.84142390934E-10	100.00%
L_0, T	4.2783907959228E-11	100.00%
L_0, T_0	4.2783907959228E-11	100.00%
T, L_0	4.2783907959228E-11	100.00%
T_0, L_0	4.2783907959228E-11	100.00%
λ, L_0	3.2168351849044E-11	100.00%
P, L_0	2.7381701093906E-11	100.00%
L_0, λ	1.4386124291719E-11	100.00%
L_0, P	1.2245468997111E-11	100.00%
L_0, L_0	3.8267090615971E-12	100.00%
P, P	0	100.00%
λ, λ	0	100.00%
Standard Combined	**1.2943629056292E-07**	

uc
1.29436E-07   0

Weight Graph of Contributions to the Standard Combine
Expansion
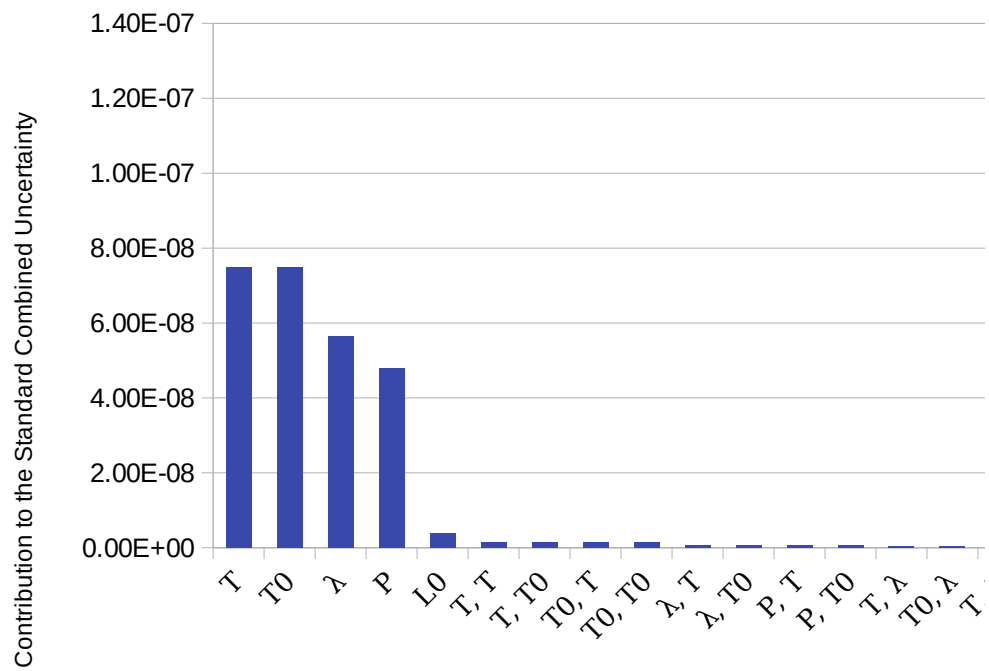
ed Uncertainty of the Coefficient of Thermal

Chart x-axis labels: P, P · T0, P · P, λ · λ, P · L0, T · L0, T0 · L0, T, L0 · T0, L0 · λ, L0 · P, L0 · L0, P, λ · L0, P · P, P · λ, λ · Standard Combined
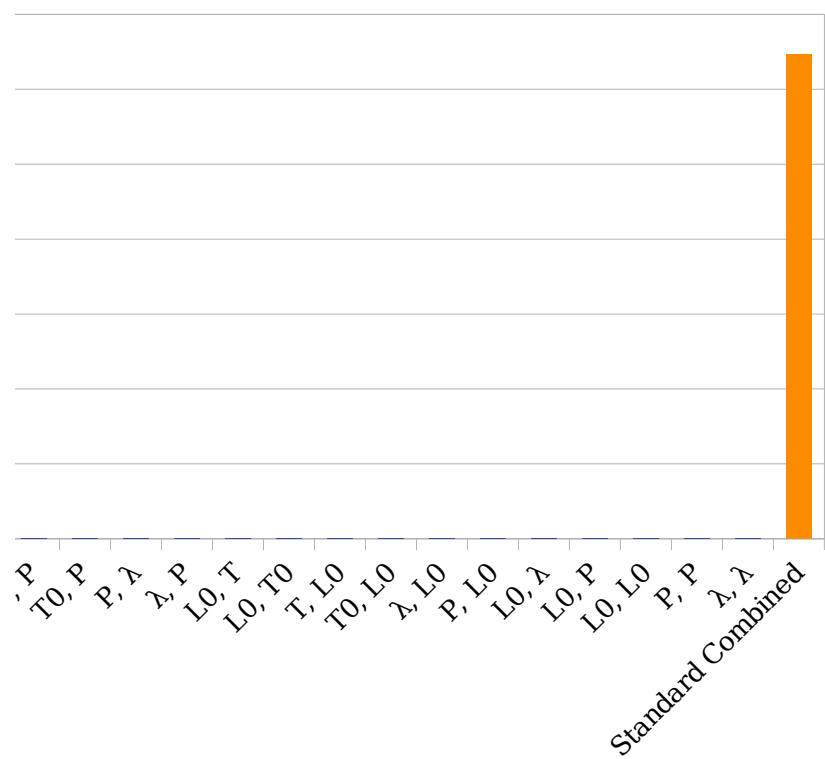
Uncertainty Budget

No.	Source of Uncertainty	Input Magnitude	Source of Information
1	Number of Transitions N	125	-
1a	Maximum N Error	-	Considerations
2	Wavelength λ	532 nm	-
2a	Maximum λ Error	-	Considerations
3	Initial Length L_0	80 mm	-
3a	Maximum L_0 Error	-	Considerations
4	Object Temperature T	60 °C	-
4a	Maximum T Error	-	Considerations
5	Temperature of Reference T_0	20 °C	-
5a	Maximum T_0 Error	-	Considerations
6	Higher Order Derivatives	-	Propagation of uncertainty
-	Coefficient of thermal expansion	1.039E-05 °C^-1	-

Original Uncertainty	Type, Distribution	Standard Uncertainty	Sensibility Coeficient	Contribution
-	-	0.5773502691896	###	###
± 1	B, Rectangular	0.5773502691896	###	###
-	-	###	###	###
± 5 nm	B, Rectangular	###	###	###
-	-	###	###	###
± 0.05 mm	B, Rectangular	###	###	###
-	-	###	###	###
± 0.5 °C	B, Rectangular	###	###	###
-	-	###	###	###
± 0.5 °C	B, Rectangular	###	###	###
-	-	-	-	###
-	Normal	-	u(α) =	###

k =	2
U =	2.5887258113E-07

Degrees of Freedom
∞
∞
∞
∞
∞
∞
∞
∞
∞
∞
∞
∞