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5. Canonical Statistics

5.1 Statistical thermodynamics

⟨Thermodynamic functions⟩

[Exercise-5] Calculate the ideal-gas entropy of the following gases at 298 K and 1 bar and compare them with experimental values.

· atomic weights (most abundant isotopes) [amu] – C:12.0 O:16.0 Ar:40.0

· $k_B = 0.6950 \text{ cm}^{-1} \text{ K}^{-1}$

	B / cm^{-1}	$h\nu / \text{cm}^{-1}$	${}^mS_{\text{exp}} / R$
(1) Ar			18.62
(2) CO	1.92	2140	23.77
(3) O ₂ (${}^3\Sigma_g^-$)	1.44	1560	24.67
