deltaD_derivation_output

Ideal extra rotational contribution = 1.0

Fractional loss due to RH bias (ε_rh) = 0.1

Fractional loss due to expansion slowdown (ε_exp) = 0.1

Using the Subtractive (Linear) Model:

$\Delta D = 1.0 - \varepsilon_{rh} - \varepsilon_{exp}$

$\Delta D = 1.0 - 0.1 - 0.1$

$\Delta D = 0.8$

Using the Multiplicative Model:

$\Delta D = 1.0 \times (1 - \varepsilon_{rh}) \times (1 - \varepsilon_{exp})$

$\Delta D = 1.0 \times (1 - 0.1) \times (1 - 0.1)$

$\Delta D = 0.81$

Thus, we adopt $\Delta D \approx 0.8$ as the effective extra fractal contribution.

Summary Equation (Subtractive): $\Delta D = 1 - 0.1 - 0.1 = 0.8$

Summary Equation (Multiplicative): $\Delta D \approx 1 \times 0.9 \times 0.9 \approx 0.81 \approx 0.8$

The observational factors reduce the ideal rotational contribution by roughly 20%,

thus yielding an effective extra fractal dimension of $\Delta D = 0.8$.