

fn accuracy_to_discrete_laplacian_scale

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This document contains materials associated with `accuracy_to_discrete_laplacian_scale`.
By `discrete_laplacian_scale_to_accuracy`, the relationship between α , a and $scale$, is:

$$1 - \alpha = \frac{\sum_{y=0}^{a-1} (1 + 1[y = 0]) e^{-(y/s)^2/2}}{\sum_{z \in \mathbb{Z}} e^{-(z/s)^2/2}}$$

There unfortunately isn't a closed-form expression for s . The algorithm conducts a binary search, with an upper bound provided by `accuracy_to_laplacian_scale`, to find the smallest s such that

$$1 - \alpha \geq \frac{\sum_{y=0}^{a-1} (1 + 1[y = 0]) e^{-(y/s)^2/2}}{\sum_{z \in \mathbb{Z}} e^{-(z/s)^2/2}}$$