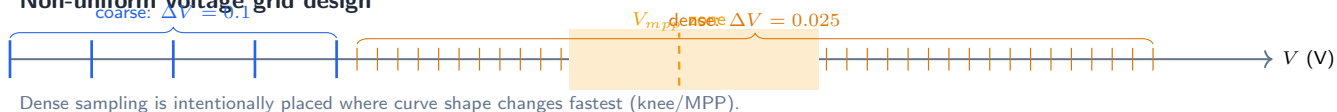


(a)

### Non-uniform voltage grid design



(b)

### Weighted error definition aligned with physical sensitivity

$$\Delta V_j = V_{j+1} - V_j, \quad w_j = 1 + (w_{mpp} - 1) \exp\left(-\frac{(V_j - V_{mpp})^2}{2\sigma_w^2}\right)$$

$$\mathcal{L}_{curve} = \frac{\sum_j \Delta V_j w_j (\hat{I}_j - I_j)^2}{\sum_j \Delta V_j w_j}$$

- $\Delta V_j$  compensates for non-uniform grid spacing so sparse regions do not dominate numerically.
- $w_j$  can emphasize the knee/MPP regime, where power-output sensitivity is highest.
- Net effect: objective prioritizes physically critical voltage ranges rather than uniform point-count weighting.

**Takeaway:** resolution + weighting are both focused on the MPP-critical region.