

Turnstile Streaming

- Initialize $x \leftarrow 0 \in \mathbb{R}^n$

• On update(i, Δ):

• Set $x[i] \leftarrow x[i] + \Delta$

- Answer queries about x using small space

- $\max_i |x[i]|$

$$\bullet \sum_i |x[i]|^p \quad (F_p \text{ moments})$$



x

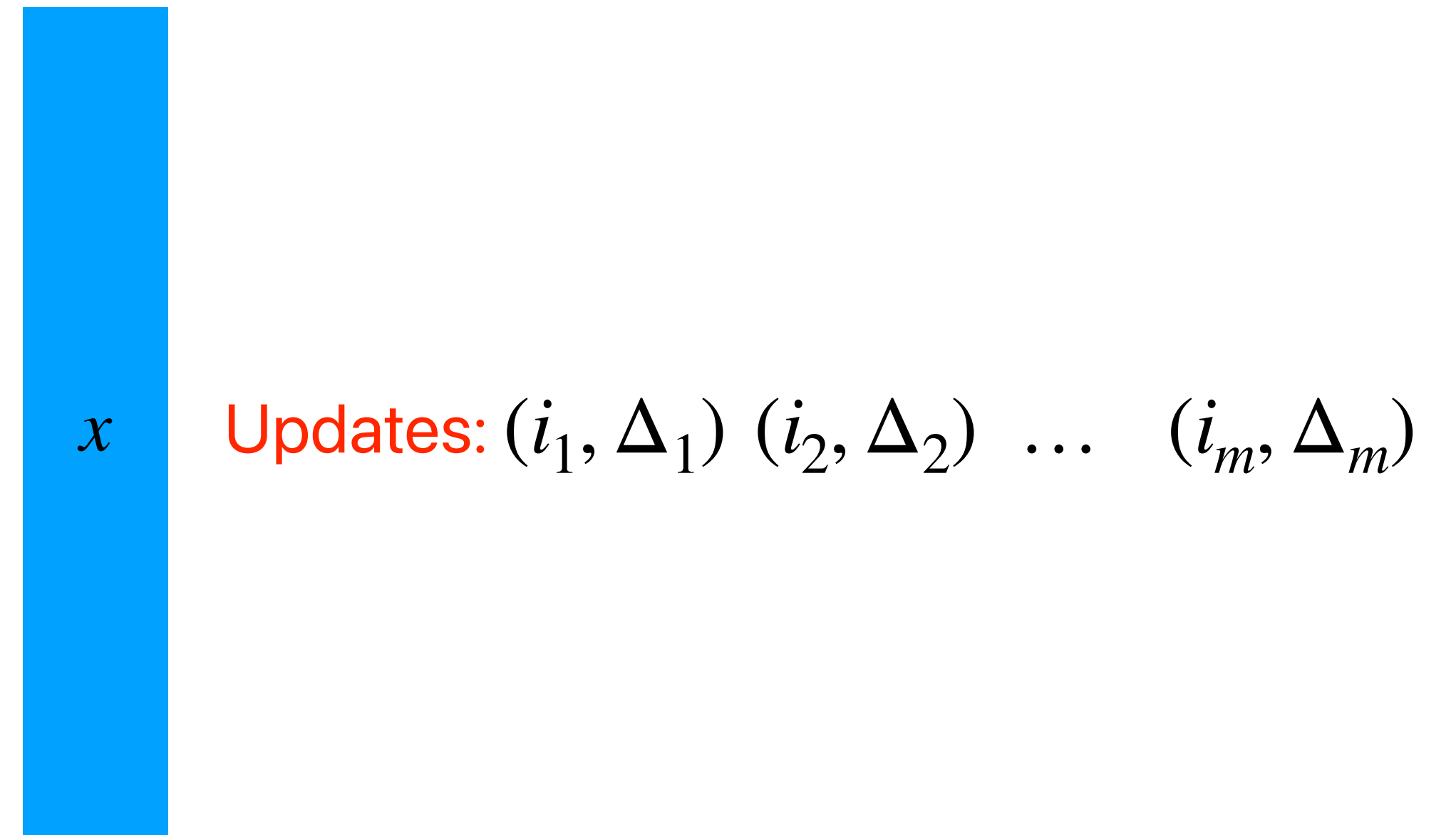
Updates: (i_1, Δ_1) (i_2, Δ_2) \dots (i_m, Δ_m)

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How is Sketching Useful?

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