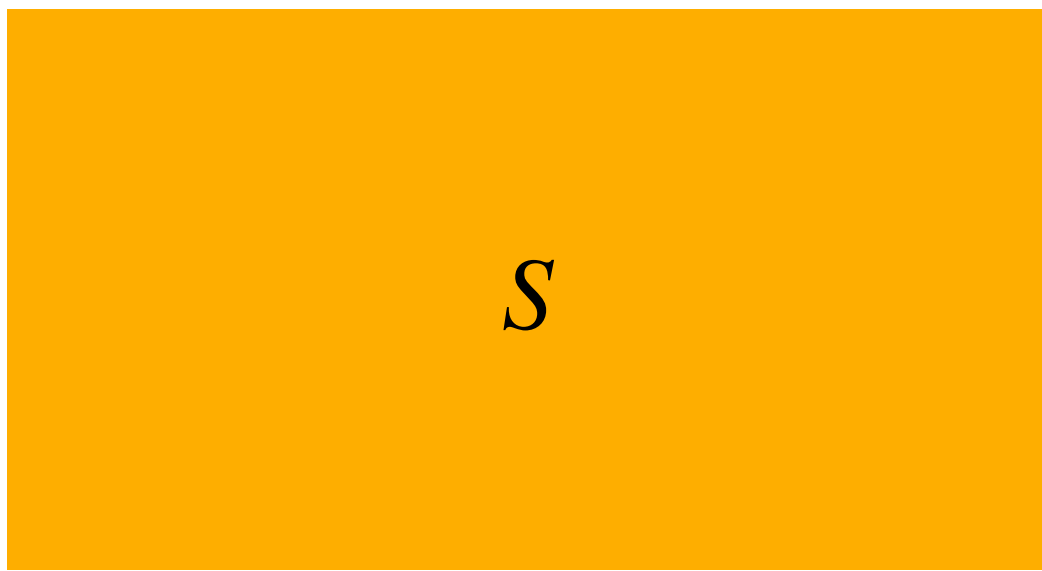




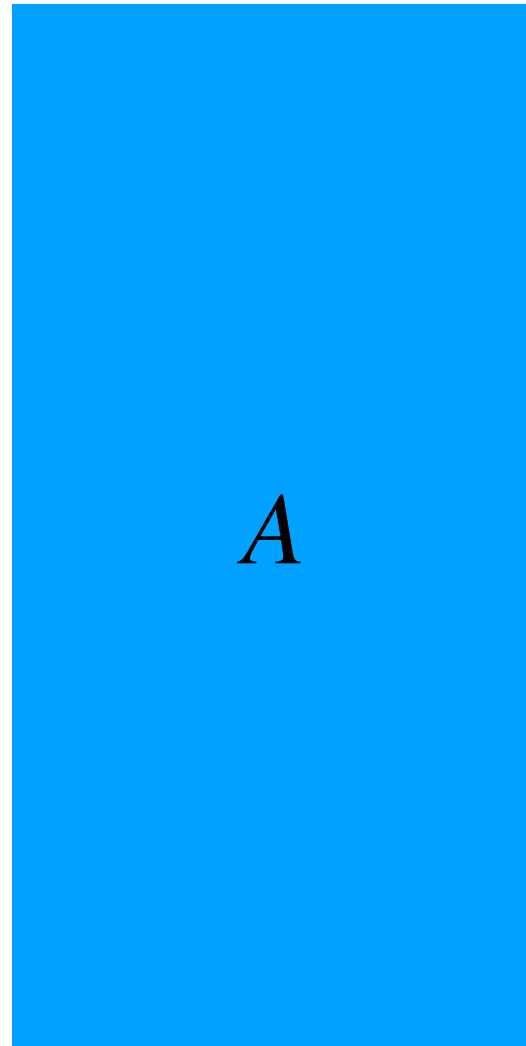
Linear Sketching

• Apply randomized linear transform

- CountSketch [Clarkson, Woodruff '13], OSNAP [Nelson, Nguyen '13], SRHT [Tropp '10], ...



$\times$



$=$

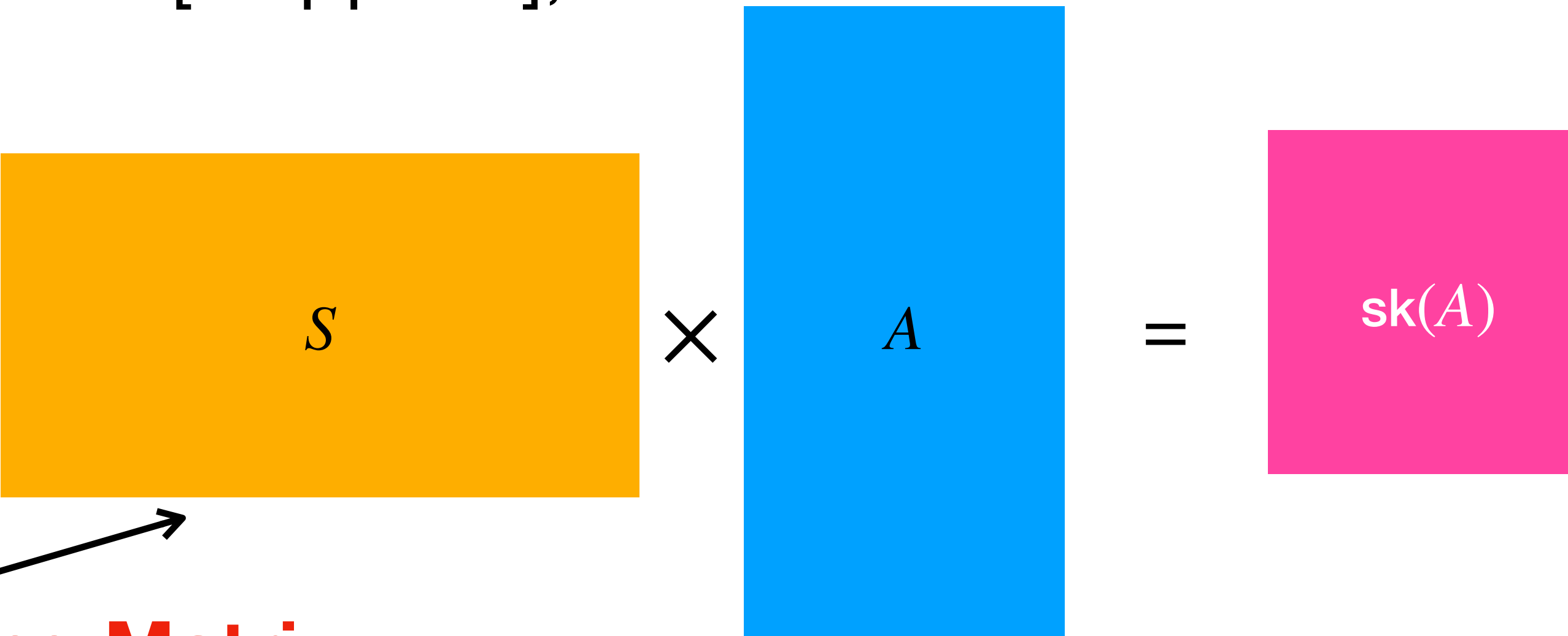


**Sketching Matrix**

- A good sketching matrix  $S$  consolidates information into the “sketch”

# Linear Sketching

- Apply a randomized linear transform
  - CountSketch [Clarkson, Woodruff '13], OSNAP [Nelson, Nguyen '13], SRHT [Tropp '10], ...


$$\begin{array}{c} \text{Sketching Matrix} \nearrow \\ S \end{array} \times A = \text{sk}(A)$$

- A good sketching matrix  $S$  consolidates information into the “sketch”

# How is Sketching Useful?

## Classic Setting