

$$y = \Phi X$$

Diagram illustrating the matrix equation $y = \Phi X$. The vectors y and X are shown as vertical stacks of colored blocks, and the matrix Φ is shown as a grid of colored blocks.

The vector y is labeled $D \times 1$ at the bottom left. It consists of 16 blocks stacked vertically, with colors repeating every 4 blocks: green, orange, red, blue, green, orange, red, blue, green, orange, red, blue, green, orange, red, blue, green.

The matrix Φ is labeled $D \times N$ at the bottom center. It is a grid of 16 rows by 16 columns. The colors of the blocks in Φ are determined by the colors of the blocks in y , showing a sparse pattern where each row has exactly one block of each color.

The vector X is labeled $N \times 1$ at the top right. It consists of 4 blocks stacked vertically, with colors repeating every 2 blocks: green, green, blue, red, green, green, blue, red.

A label $K\text{-sparse}$ is positioned next to the vector X .

Below the diagram, the text $M = |\Omega| < N$ sensors selected is displayed, indicating that the number of non-zero elements in ΦX is less than the dimension N .