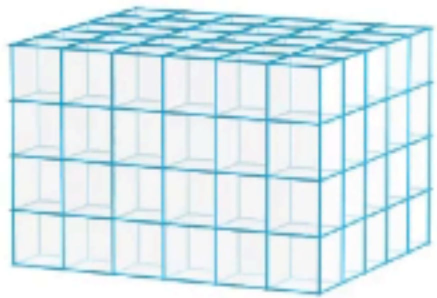
1

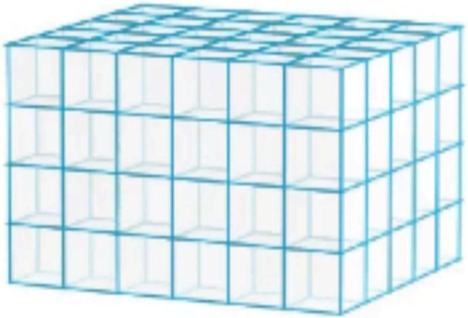
Matrix Code Equivalence

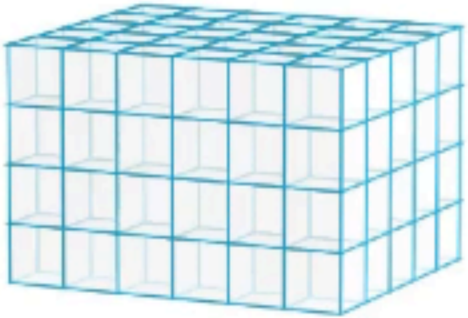
symmetry

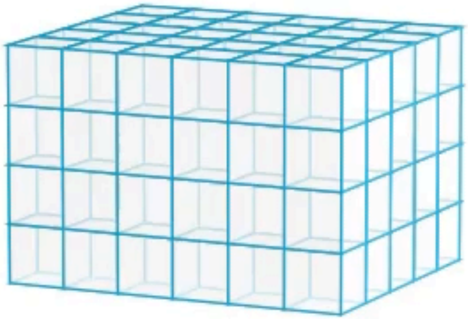
Viewed as a 3-tensor, we can see $\mathscr{C}$ from three directions

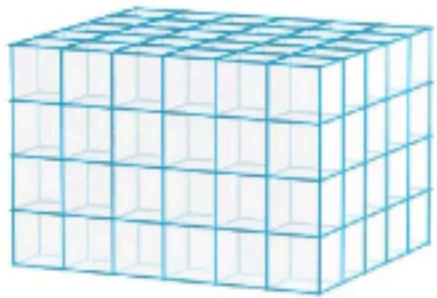
- a k-dimensional code in $\mathbb{F}_q^{m\times n}$
- an m-dimensional code in $\mathbb{F}_q^{n\times k}$
- an n-dimensional code in $\mathbb{F}_q^{m\times k}$

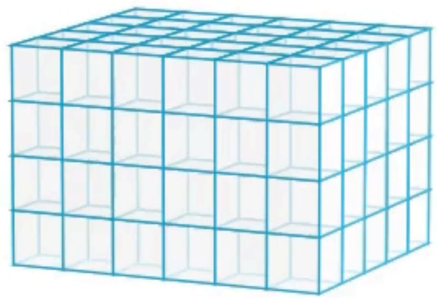


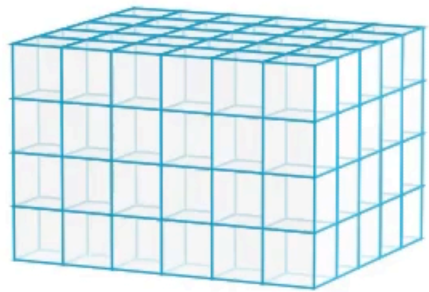












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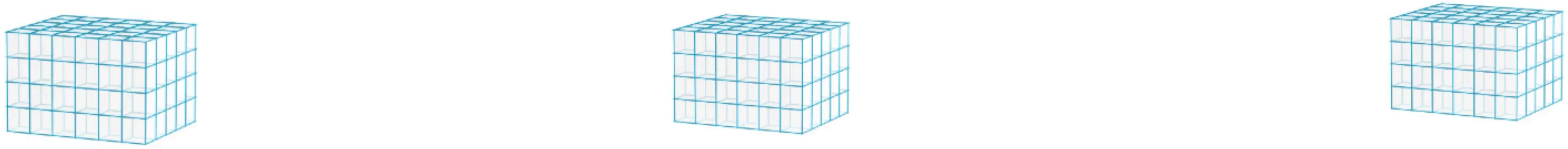

1

Matrix Code Equivalence

combinatorial

Attacks using isometry-invariant substructures

Example: *find low-rank codewords in both codes and match them up, construct isometry from this.*
or, *find peculiar subcodes on both sids, match them up, and construct the isometry between the subcodes*

- Graph-based algorithm
- Leon's like algorithm

$$\tilde{\mathcal{O}}(q^{\min(n,m,k)})$$