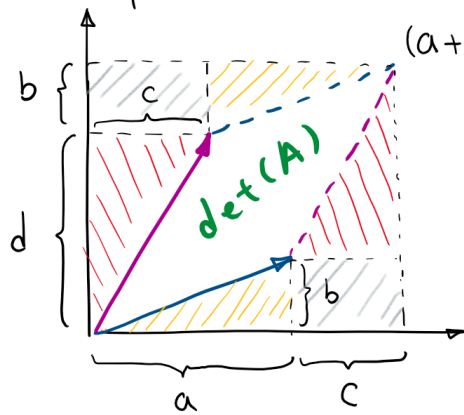


Geometric Interpretation of Determinant

Zengchang Qin (Ph.D)

$$A = \begin{pmatrix} a & b \\ c & d \end{pmatrix}$$

$$\det(A) = \begin{vmatrix} a & b \\ c & d \end{vmatrix}$$



$$(a+c) \cdot (b+d) = ab + ad + bc + cd$$

$$\begin{cases} \boxed{\text{yellow}} & 2 \times \frac{ab}{2} = ab \\ \boxed{\text{red}} & 2 \times \frac{cd}{2} = cd \\ \boxed{\text{blue}} & 2 \times bc \end{cases}$$

$$\text{Therefore, } \det(A) = (a+c) \cdot (b+d) - ab - cd - 2bc = ad - bc$$