

$$\text{product set } n! = 1 \cdot 2 \cdots (n-1) \cdot n = \underbrace{1|1}_{\times} \underbrace{1|2}_{\times} \cdots \underbrace{1|n-1}_{\times} \underbrace{1|n}_{\times} = \frac{a_1 a_2 \cdots a_n}{a_j \in 1|j: 1 \leq a_j \leq j}$$

$$\pi \in \mathbf{C}(n) \xrightarrow[\text{bij}]{} n! \ni \underline{\pi}$$

$$\underline{\pi}_j = \# \frac{1 \leq i \leq j}{\overline{\pi}^{-1}(i) \leq \overline{\pi}^{-1}(j)} = \text{Anzahl der } i \leq j \text{ in der Permutation bis zur Stelle } j$$

$$i = j \text{ zulässig} \Rightarrow 1 \leq \underline{\pi}_j \leq j$$

$$\frac{13542}{12233} = \frac{\overline{1} | \overline{13542} | \overline{13} | \overline{1354} | \overline{135}}{1 \quad 2 \quad 2 \quad 3 \quad 3}$$

$$\frac{654321}{111111} = \frac{\overline{654321} | \overline{65432} | \overline{6543} | \overline{654} | \overline{65} | \overline{6}}{1 \quad 1 \quad 1 \quad 1 \quad 1 \quad 1}$$

$$\frac{35687214}{11142344} = \frac{\overline{35687214} | \overline{356872} | \overline{3} | \overline{35687214} | \overline{35} | \overline{356} | \overline{35687} | \overline{3568}}{1 \quad 1 \quad 1 \quad 4 \quad 2 \quad 3 \quad 4 \quad 4}$$

$$\frac{693714825}{121351362} = \frac{\overline{69371} | \overline{69371482} | \overline{693} | \overline{693714} | \overline{693714825} | \overline{6} | \overline{6937} | \overline{6937148} | \overline{69}}{1 \quad 2 \quad 1 \quad 3 \quad 5 \quad 1 \quad 3 \quad 6 \quad 2}$$

$$\frac{685914372}{122211624} = \frac{\overline{68591} | \overline{685914372} | \overline{6859143} | \overline{685914} | \overline{685} | \overline{6} | \overline{68591437} | \overline{68} | \overline{6859}}{1 \quad 2 \quad 2 \quad 2 \quad 1 \quad 1 \quad 6 \quad 2 \quad 4}$$

$$a \in n! \xrightarrow[\text{bij}]{} \mathbf{C}(n) \ni \tilde{a}$$

insert j at position a_j

$$\frac{12233}{13542} = \frac{1}{1} | \frac{2}{12} | \frac{2}{132} | \frac{3}{1342} | \frac{3}{13542}$$

$$\frac{111111}{654321} = \frac{1}{1} | \frac{1}{21} | \frac{1}{321} | \frac{1}{4321} | \frac{1}{54321} | \frac{1}{654321}$$

$$\frac{11142344}{35687214} = \frac{1}{1} | \frac{1}{21} | \frac{1}{321} | \frac{4}{3214} | \frac{2}{35214} | \frac{3}{356214} | \frac{4}{3567214} | \frac{4}{35687214}$$

$$\frac{121351362}{693714825} = \frac{1}{\underline{1}} \left| \frac{2}{\underline{12}} \right| \frac{1}{\underline{312}} \left| \frac{3}{\underline{3142}} \right| \frac{5}{\underline{31425}} \left| \frac{1}{\underline{631425}} \right| \frac{3}{\underline{6371425}} \left| \frac{6}{\underline{63714825}} \right| \frac{2}{\underline{693714825}}$$

$$\frac{122211624}{685914372} = \frac{1}{\underline{1}} \left| \frac{2}{\underline{12}} \right| \frac{2}{\underline{132}} \left| \frac{2}{\underline{1432}} \right| \frac{1}{\underline{51432}} \left| \frac{1}{\underline{651432}} \right| \frac{6}{\underline{6514372}} \left| \frac{2}{\underline{68514372}} \right| \frac{4}{\underline{685914372}}$$