

Fraction(C) :=
$$\left| \begin{array}{l} R \leftarrow \frac{1}{C_{\text{last}(C)}} \\ \text{for } i \in \text{last}(C) - 1 \dots \text{ORIGIN} \\ R \leftarrow \frac{1}{C_i - R} \\ R \end{array} \right.$$

Fracture(C) :=
$$\left| \begin{array}{l} R_{\text{ORIGIN}} \leftarrow \frac{1}{C_{\text{ORIGIN}}} \\ \text{for } i \in \text{ORIGIN} + 1 \dots \text{last}(C) \\ R_i \leftarrow \text{Fraction}(\text{submatrix}(C, \text{ORIGIN}, i, \text{ORIGIN}, \text{ORIGIN})) - \sum_{f = \text{ORIGIN}}^{i-1} R_f \\ R \text{ simplify } \rightarrow \end{array} \right.$$

FractEq(C) :=
$$\left| \begin{array}{l} \text{Lhs} \leftarrow \text{Fraction}(C) \\ F \leftarrow \text{Fracture}(C) \text{ simplify } \rightarrow \\ \text{Rhs} \leftarrow \sum F \\ \text{return Lhs} = \text{Rhs} \end{array} \right.$$

$$\text{Fraction} \left(\begin{pmatrix} C_0 \\ C_1 \\ C_2 \end{pmatrix} \right) \rightarrow \frac{1}{C_0 - \frac{1}{C_1 - \frac{1}{C_2}}}$$

$$\text{Fracture} \left(\begin{pmatrix} C_0 \\ C_1 \\ C_2 \end{pmatrix} \right) \rightarrow \left[\begin{array}{c} \frac{1}{C_0} \\ \frac{1}{C_0(C_0 C_1 - 1)} \\ \frac{1}{(C_0 C_1 - 1)(C_0 + C_2 - C_0 C_1 C_2)} \end{array} \right]$$

$$\text{FractEq} \left(\begin{pmatrix} C_0 \\ C_1 \\ C_2 \end{pmatrix} \right) \rightarrow \frac{1}{C_0 - \frac{1}{C_1 - \frac{1}{C_2}}} = \frac{1}{C_0} - \frac{1}{(C_0 C_1 - 1)(C_0 + C_2 - C_0 C_1 C_2)} + \frac{1}{C_0(C_0 C_1 - 1)}$$

$$\text{Fraction} \left(\begin{pmatrix} C_0 \\ C_1 \\ C_2 \\ C_3 \\ C_4 \end{pmatrix} \right) \rightarrow \frac{1}{C_0 - \frac{1}{C_1 - \frac{1}{C_2 - \frac{1}{C_3 - \frac{1}{C_4}}}}}$$

$$\text{Fracture} \left(\begin{pmatrix} C_0 \\ C_1 \\ C_2 \\ C_3 \\ C_4 \end{pmatrix} \right) \rightarrow \left[\begin{array}{c} \frac{1}{C_0} \\ \frac{1}{C_0(C_0 C_1 - 1)} \\ \frac{1}{(C_0 C_1 - 1)(C_0 + C_2 - C_0 C_1 C_2)} \\ \frac{1}{(C_0 + C_2 - C_0 C_1 C_2)(C_0 C_1 + C_0 C_3 + C_2 C_3 - C_0 C_1 C_2 C_3 - 1)} \\ \frac{1}{(C_0 C_1 + C_0 C_3 + C_2 C_3 - C_0 C_1 C_2 C_3 - 1)(C_0 + C_2 + C_4 - C_0 C_1 C_2 - C_0 C_1 C_4 - C_0 C_3 C_4 - C_2 C_3 C_4 + C_0 C_1 C_2 C_3 C_4)} \end{array} \right]$$

$$\text{FractEq} \left(\begin{pmatrix} C_0 \\ C_1 \\ C_2 \\ C_3 \\ C_4 \end{pmatrix} \right) \rightarrow \frac{1}{C_0 - \frac{1}{C_1 - \frac{1}{C_2 - \frac{1}{C_3 - \frac{1}{C_4}}}}} = \frac{1}{C_0} - \frac{1}{(C_0 C_1 - 1)(C_0 + C_2 - C_0 C_1 C_2)} - \frac{1}{(C_0 C_1 + C_0 C_3 + C_2 C_3 - C_0 C_1 C_2 C_3 - 1)(C_0 + C_2 + C_4 - C_0 C_1 C_2 - C_0 C_1 C_4 - C_0 C_3 C_4 - C_2 C_3 C_4 + C_0 C_1 C_2 C_3 C_4)} + \frac{1}{C_0(C_0 C_1 - 1)} + \frac{1}{(C_0 + C_2 - C_0 C_1 C_2)(C_0 C_1 + C_0 C_3 + C_2 C_3 - C_0 C_1 C_2 C_3 - 1)}$$