

Prof. Dr. Alfred Toth

Dualinvarianz der Determinationfunktion der Kategorienklasse

1. Im Anschluß an die Nachweise der Permutationsinvarianz (vgl. Toth 2025a) und der Diagonalinvarianz (vgl. Toth 2025b) der Kategorienklasse (vgl. Bense 1992) wird im folgenden deren Dualinvarianz nachgewiesen.

2. Matrizen und Differentiationen

$\mathfrak{M}^1 =$

1.2 1.1 1.3

2.1 2.2 2.3

3.1 3.3 3.2

$\mathfrak{M}^2 =$

1.3 1.1 1.2

2.3 2.2 2.1

3.2 3.3 3.1

$\mathfrak{M}^3 =$

1.1 1.2 1.3

2.2 2.1 2.3

3.3 3.1 3.2

$\mathfrak{M}^4 =$

1.1 1.3 1.2

2.2 2.3 2.1

3.3 3.2 3.1

$\mathfrak{M}^5 =$

1.2 1.3 1.1

2.1 2.3 2.2

3.1 3.2 3.3

$\mathfrak{M}^6 =$

1.3 1.2 1.1

2.3 2.1 2.2

3.2 3.1 3.3

1. $(1.2, 1.1, 1.3)' = ((1.1, 2.1), (1.1, 1.3), (1.1, 2.3))$

2. $(1.3, 1.1, 1.2)' = ((1.1, 3.1), (1.1, 1.2), (1.1, 3.2))$

3. $(1.1, 1.2, 1.3)' = ((1.1, 1.2), (1.1, 2.3), (1.1, 1.3))$

4. $(1.1, 1.3, 1.2)' = ((1.1, 1.3), (1.1, 3.2), (1.1, 1.2))$

5. $(1.2, 1.3, 1.1)' = ((1.1, 2.3), (1.1, 3.1), (1.1, 2.1))$

6. $(1.3, 1.2, 1.1)' = ((1.1, 3.2), (1.1, 2.1), (1.1, 3.1))$

3. Duale Matrizen und Differentiationen

$\mathfrak{M}^7 =$

3.1 1.1 2.1

3.2 2.2 1.2

2.3 3.3 1.3

$\mathfrak{M}^9 =$

3.1 2.1 1.1

3.2 1.2 2.2

2.3 1.3 3.3

$\mathfrak{M}^{11} =$

1.1 3.1 2.1

2.2 3.2 1.2

3.3 2.3 1.3

$\mathfrak{M}^8 =$

2.1 1.1 3.1

1.3 2.2 3.2

1.3 3.3 2.3

$\mathfrak{M}^{10} =$

2.1 3.1 1.1

1.2 3.2 2.2

1.3 2.3 3.3

$\mathfrak{M}^{12} =$

1.1 2.1 3.1

2.2 1.2 3.2

3.3 1.3 2.3

7. $(3.1, 1.1, 2.1)' = ((3.1, 1.1), (1.2, 1.1), (3.2, 1.1))$

8. $(2.1, 1.1, 3.1)' = ((2.1, 1.1), (1.3, 1.1), (2.3, 1.1))$

9. $(3.1, 2.1, 1.1)' = ((3.2, 1.1), (2.1, 1.1), (3.1, 1.1))$

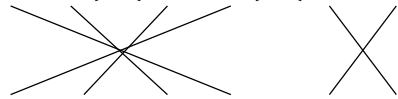
10. $(2.1, 3.1, 1.1)' = ((2.3, 1.1), (3.1, 1.1), (2.1, 1.1))$

11. $(1.1, 3.1, 2.1)' = ((1.3, 1.1), (3.2, 1.1), (1.2, 1.1))$

12. $(1.1, 2.1, 3.1)' = ((1.2, 1.1), (2.3, 1.1), (1.3, 1.1))$

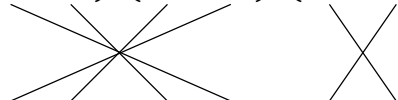
4. Synopsis der zueinander dualen Differentiationen

1. $(1.2, 1.1, 1.3)' = ((1.1, 2.1), (1.1, 1.3), (1.1, 2.3))$



7. $(3.1, 1.1, 2.1)' = ((3.1, 1.1), (1.2, 1.1), (3.2, 1.1))$

2. $(1.3, 1.1, 1.2)' = ((1.1, 3.1), (1.1, 1.2), (1.1, 3.2))$



8. $(2.1, 1.1, 3.1)' = ((2.1, 1.1), (1.3, 1.1), (2.3, 1.1))$

$$3. (1.1, 1.2, 1.3)' = ((1.1, 1.2), (1.1, 2.3), (1.1, 1.3))$$

$$9. (3.1, 2.1, 1.1)' = ((3.2, 1.1), (2.1, 1.1), (3.1, 1.1))$$

$$4. (1.1, 1.3, 1.2)' = ((1.1, 1.3), (1.1, 3.2), (1.1, 1.2))$$

$$10. (2.1, 3.1, 1.1)' = ((2.3, 1.1), (3.1, 1.1), (2.1, 1.1))$$

$$5. (1.2, 1.3, 1.1)' = ((1.1, 2.3), (1.1, 3.1), (1.1, 2.1))$$

$$11. (1.1, 3.1, 2.1)' = ((1.3, 1.1), (3.2, 1.1), (1.2, 1.1))$$

$$6. (1.3, 1.2, 1.1)' = ((1.1, 3.2), (1.1, 2.1), (1.1, 3.1))$$

$$12. (1.1, 2.1, 3.1)' = ((1.2, 1.1), (2.3, 1.1), (1.3, 1.1))$$

Literatur

Bense, Max, Die Eigenrealität der Zeichen. Baden-Baden 1992

Toth, Alfred, Die Kategorienklasse als Determinationsrelation. In: Electronic Journal for Mathematical Semiotics, 2025a

Toth, Alfred, Die Determinationsfunktion der Kategorienklasse ist diagonal-invariant. In: Electronic Journal for Mathematical Semiotics, 2025b

11.10.2025