

Prof. Dr. Alfred Toth

Grundlagen der Randtheorie

1. Wir gehen aus von der in Toth (2015) definierten Randrelation

$$R = U, R(U, S), S$$

und führen die PC-Differenzierung in left und right order (vgl. Kaehr 2011, S. 28) ein

$$U \rightarrow U^{\text{lo}}, U^{\text{ro}}; R \rightarrow R^{\text{lo}}, R^{\text{ro}}; S \rightarrow S^{\text{lo}}, S^{\text{ro}}.$$

Dann bekommen wir

$$R = (U^{\text{lo}}, U^{\text{ro}} = R^{\text{lo}}, R^{\text{ro}} = S^{\text{lo}}, S^{\text{ro}}).$$

2. Bei den folgenden Grundlagen einer Randtheorie benutzen wir als Vorarbeiten Toth (2025a, b) mit den vier „Moduln“: chiasmische Strukturschema, topologische Abbildungsschemata, Diamonds und Trajektogramme.

2.1. Chiasmische Strukturschemata

$$1. (U^{\text{lo}}.U^{\text{ro}}=R^{\text{lo}}, R^{\text{ro}}=S^{\text{lo}}.S^{\text{ro}}) \rightarrow (U^{\text{lo}}.R^{\text{ro}}=S^{\text{lo}} \mid U^{\text{ro}}=R^{\text{lo}}.S^{\text{ro}})$$

$$\begin{array}{ccccccc} U^{\text{lo}} & \rightarrow & U^{\text{ro}}=R^{\text{lo}} & \circ & R^{\text{ro}}=S^{\text{lo}} & \rightarrow & S^{\text{ro}} \\ & & \searrow & & \swarrow & & \\ \parallel & & & \downarrow & & & \parallel \\ U^{\text{lo}} & \rightarrow & R^{\text{ro}}=S^{\text{lo}} & \circ & U^{\text{ro}}=R^{\text{lo}} & \rightarrow & S^{\text{ro}} \end{array}$$

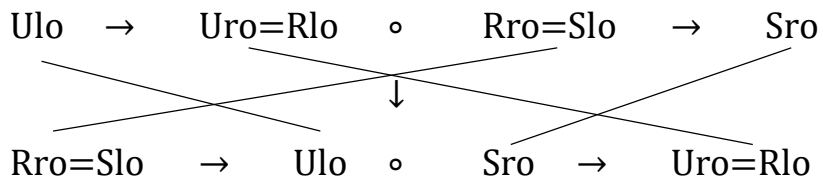
$$2. (U^{\text{lo}}.U^{\text{ro}}=R^{\text{lo}}, R^{\text{ro}}=S^{\text{lo}}.S^{\text{ro}}) \rightarrow (U^{\text{ro}}=R^{\text{lo}}.S^{\text{ro}} \mid U^{\text{lo}}.R^{\text{ro}}=S^{\text{lo}})$$

$$\begin{array}{ccccccc} U^{\text{lo}} & \rightarrow & U^{\text{ro}}=R^{\text{lo}} & \circ & R^{\text{ro}}=S^{\text{lo}} & \rightarrow & S^{\text{ro}} \\ & \searrow & \swarrow & & \swarrow & \searrow & \\ U^{\text{ro}}=R^{\text{lo}} & \rightarrow & S^{\text{ro}} & \circ & U^{\text{lo}} & \rightarrow & R^{\text{ro}}=S^{\text{lo}} \end{array}$$

$$3. (U^{\text{lo}}.U^{\text{ro}}=R^{\text{lo}}, R^{\text{ro}}=S^{\text{lo}}.S^{\text{ro}}) \rightarrow (S^{\text{ro}}.U^{\text{ro}}=R^{\text{lo}} \mid R^{\text{ro}}=S^{\text{lo}}.U^{\text{lo}})$$

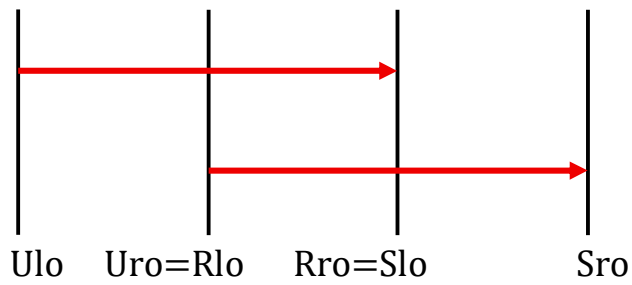
$$\begin{array}{ccccccc} U^{\text{lo}} & \rightarrow & U^{\text{ro}}=R^{\text{lo}} & \circ & R^{\text{ro}}=S^{\text{lo}} & \rightarrow & S^{\text{ro}} \\ & \searrow & \parallel & & \parallel & \swarrow & \\ S^{\text{ro}} & \rightarrow & U^{\text{ro}}=R^{\text{lo}} & \circ & R^{\text{ro}}=S^{\text{lo}} & \rightarrow & U^{\text{lo}} \end{array}$$

$$4. (Ulo.Uro=Rlo, Rro=Slo.Sro) \rightarrow (Rro=Slo.Ulo \mid Sro.Uro=Rlo)$$

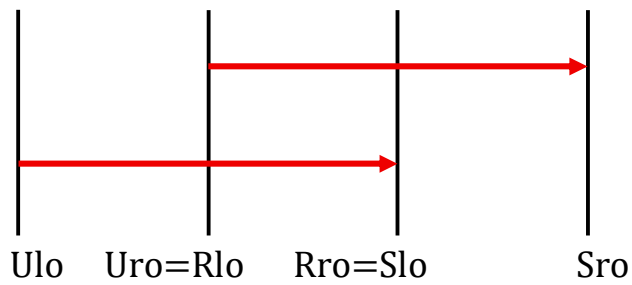


2.2. Topologische Abbildungsschemata

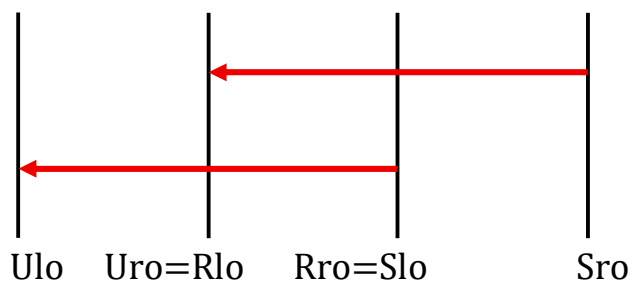
$$1. (Ulo.Uro=Rlo, Rro=Slo.Sro) \rightarrow (Ulo.Rro=Slo \mid Uro=Rlo.Sro)$$



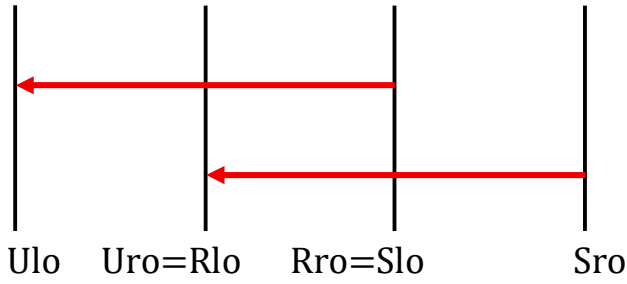
$$2. (Ulo.Uro=Rlo, Rro=Slo.Sro) \rightarrow (Uro=Rlo.Sro \mid Ulo.Rro=Slo)$$



$$3. (Ulo.Uro=Rlo, Rro=Slo.Sro) \rightarrow (Sro.Uro=Rlo \mid Rro=Slo.Ulo)$$

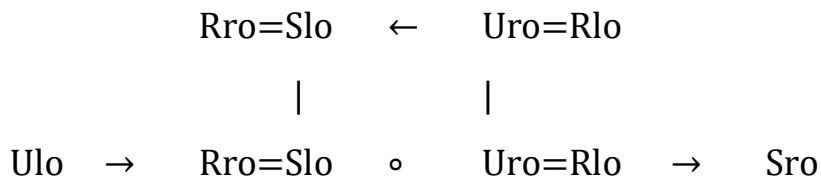


$$4. (Ulo.Uro=Rlo, Rro=Slo.Sro) \rightarrow (Rro=Slo.Ulo \mid Sro.Uro=Rlo)$$

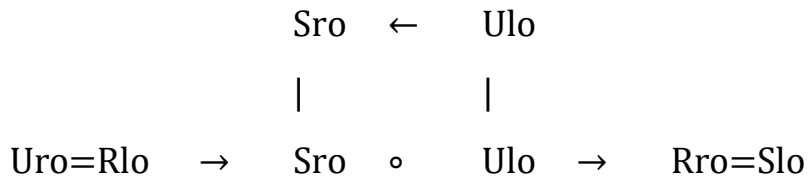


2.3. Diamonds

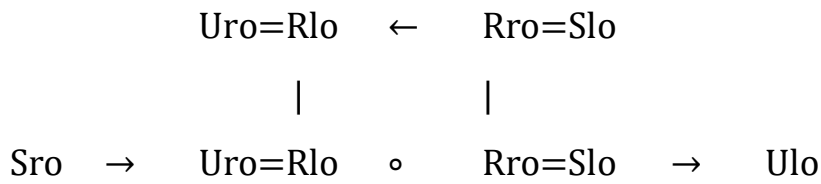
$$1. (Ulo.Uro=Rlo, Rro=Slo.Sro) \rightarrow (Ulo.Rro=Slo \mid Uro=Rlo.Sro)$$



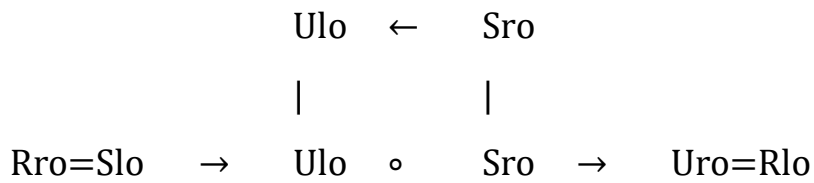
$$2. (Ulo.Uro=Rlo, Rro=Slo.Sro) \rightarrow (Uro=Rlo.Sro \mid Ulo.Rro=Slo)$$



$$3. (Ulo.Uro=Rlo, Rro=Slo.Sro) \rightarrow (Sro.Uro=Rlo \mid Rro=Slo.Ulo)$$

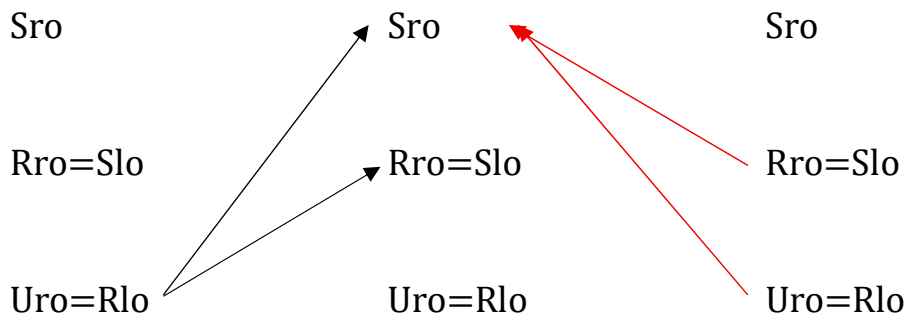


$$4. (Ulo.Uro=Rlo, Rro=Slo.Sro) \rightarrow (Rro=Slo.Ulo \mid Sro.Uro=Rlo)$$

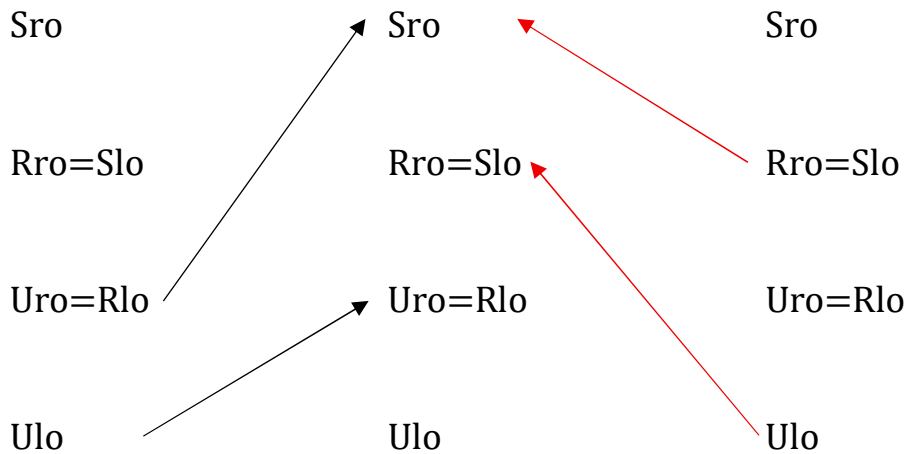


2.4. Trajektogramme

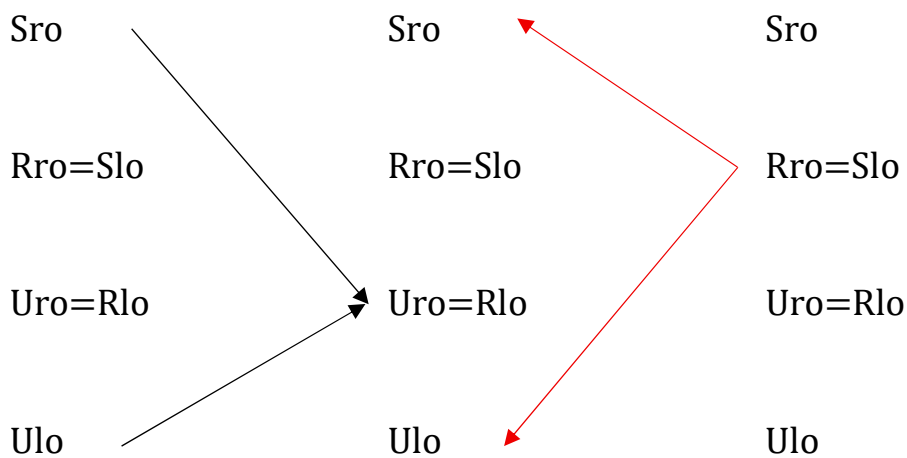
1. $(Ulo.Uro=Rlo, Rro=Slo.Sro) \rightarrow (Ulo.Rro=Slo \mid Uro=Rlo.Sro)$



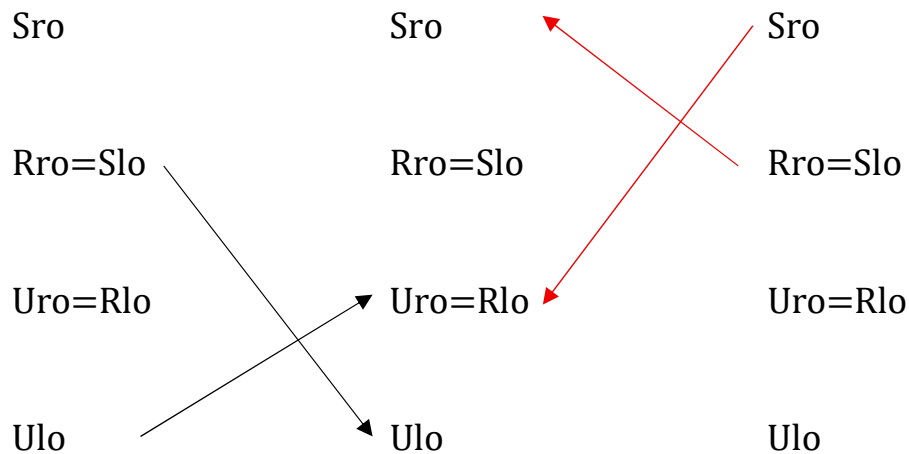
2. $(Ulo.Uro=Rlo, Rro=Slo.Sro) \rightarrow (Uro=Rlo.Sro \mid Ulo.Rro=Slo)$



3. $(Ulo.Uro=Rlo, Rro=Slo.Sro) \rightarrow (Sro.Uro=Rlo \mid Rro=Slo.Ulo)$



4. $(Ulo.Uro=Rlo, Rro=Slo.Sro) \rightarrow (Rro=Slo.Ulo \mid Sro.Uro=Rlo)$



Literatur

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