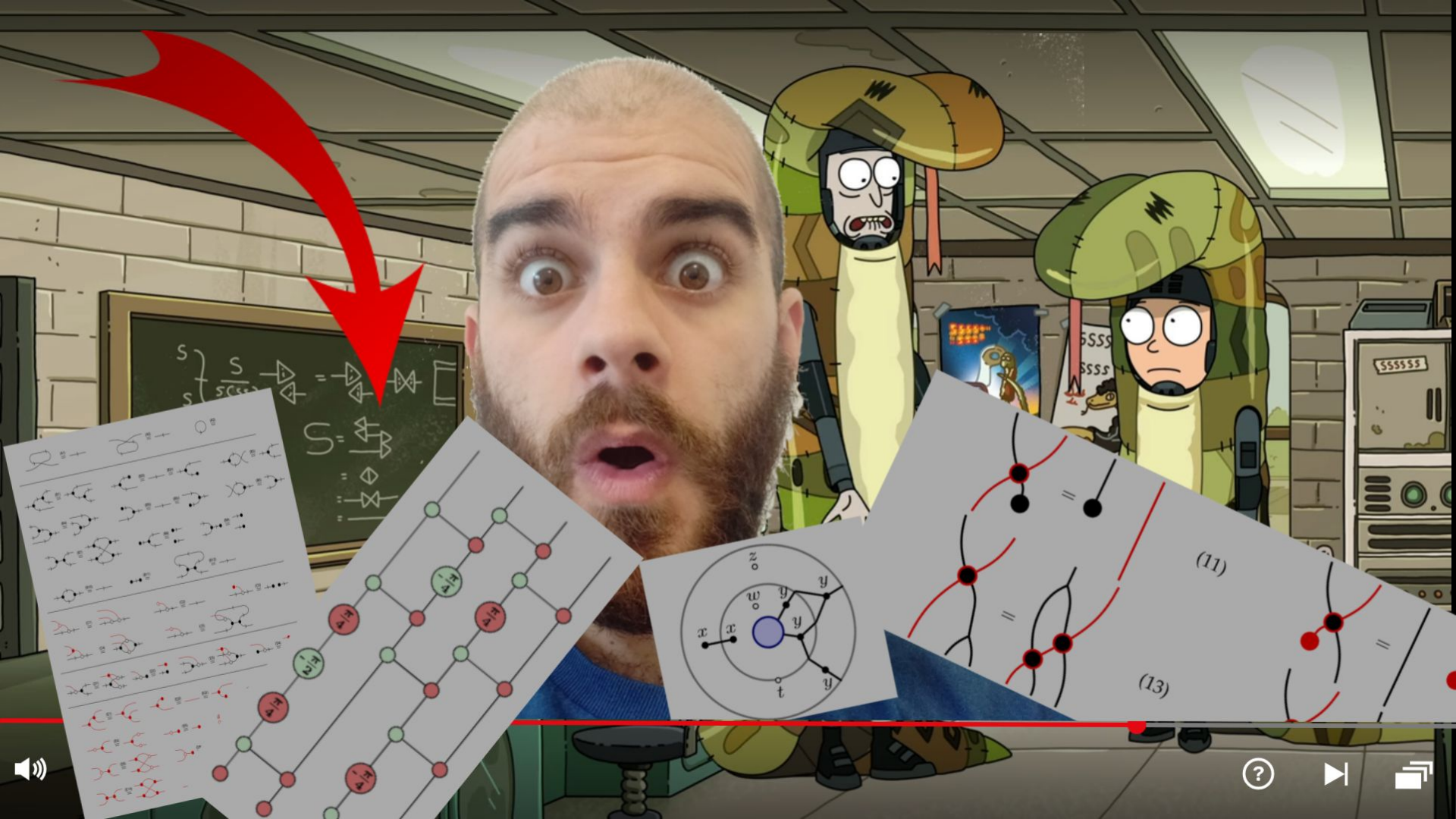
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Abstraction

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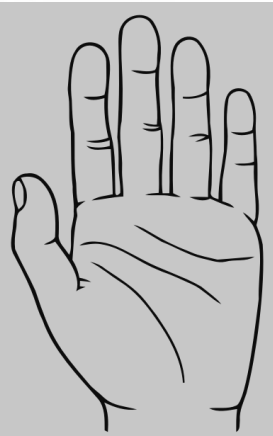

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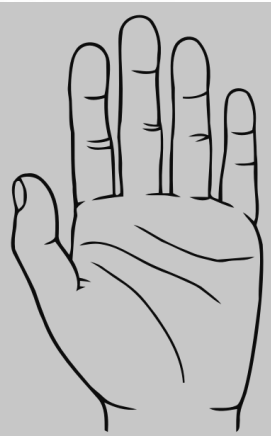

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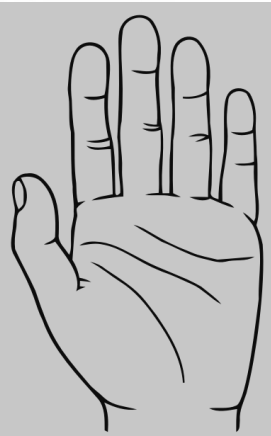

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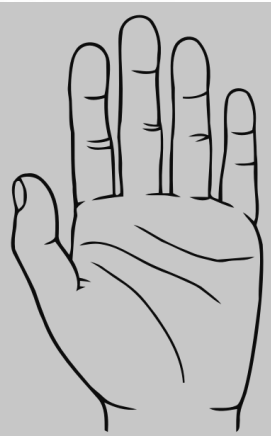

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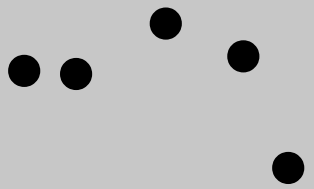
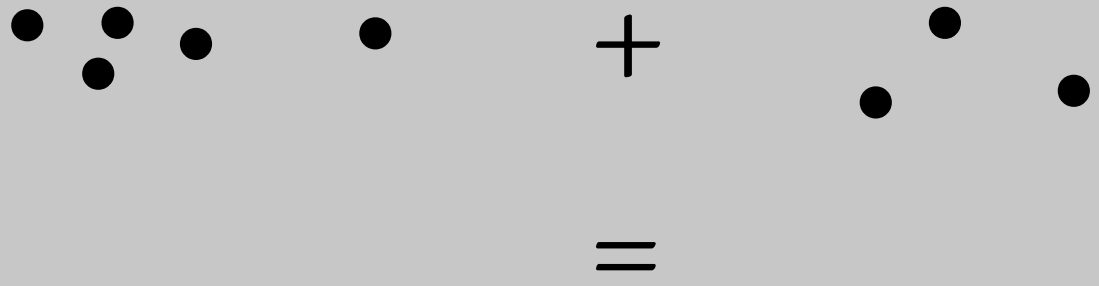
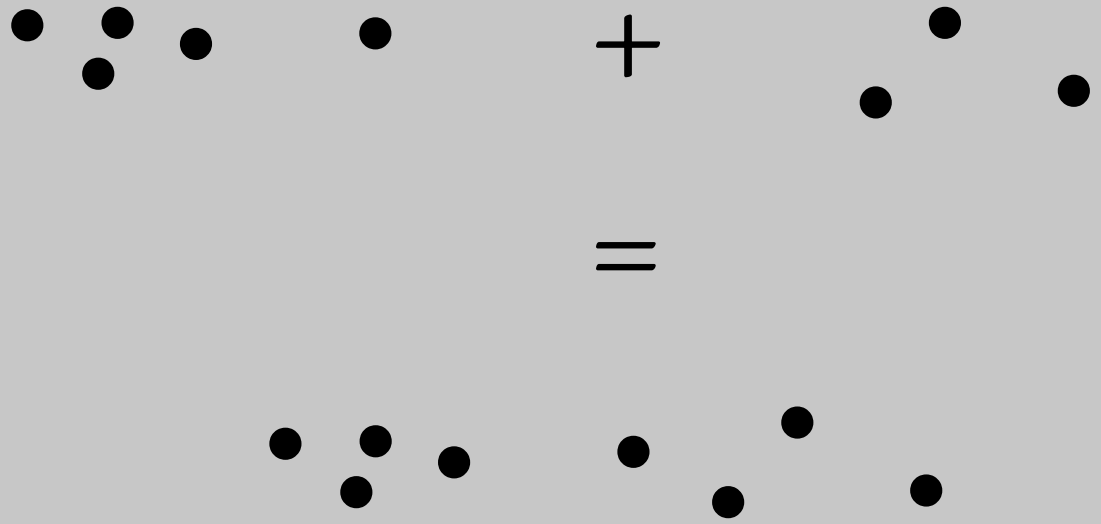


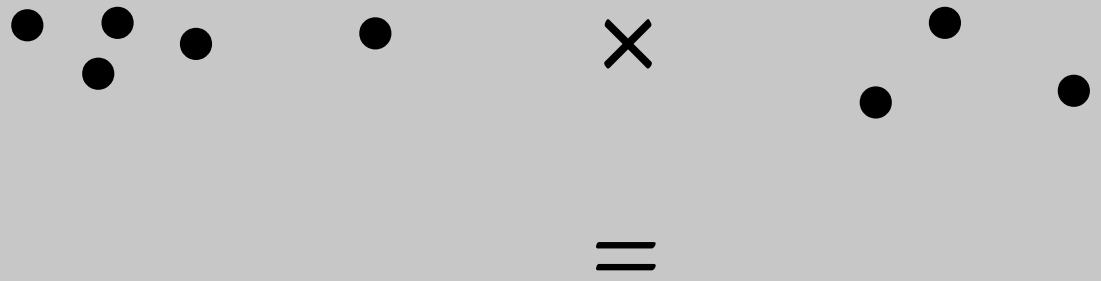
Addition



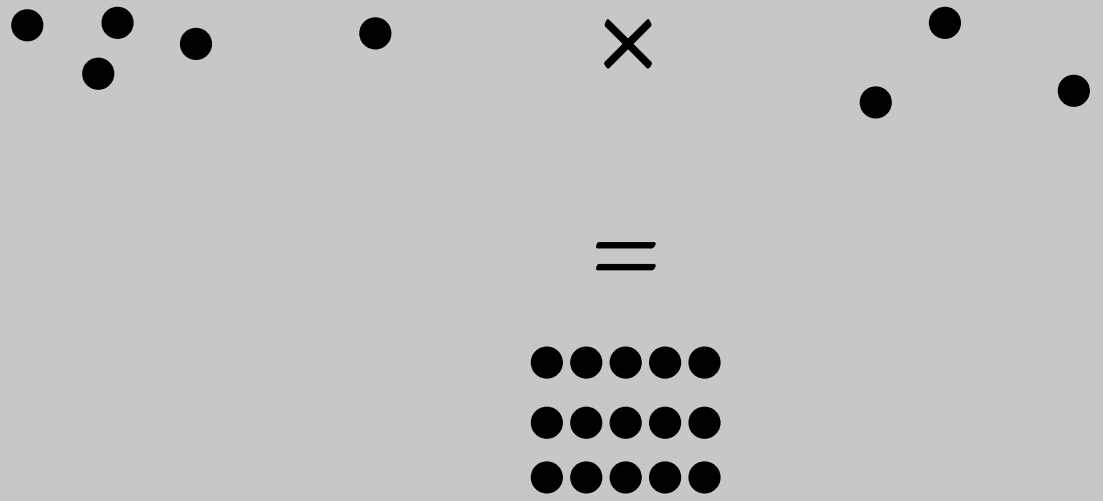
Addition



Multiplication



Multiplication



Rimes

Rimes

C'est l'histoire de Loulou Lapierre
Une p'tite mère ben ordinaire
Qui travaille à temps partiel
Comme femme de chambre dans un hôtel

Joyeux calvaire! - Les Cowboys Fringants

Rimes

C'est l'histoire de Loulou Lapierre Une p'tite mère ben ordinaire Qui travaille à temps partiel Comme femme de chambre dans un hôtel	A A B B	
Joyeux calvaire! - Les Cowboys Fringants		

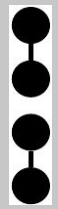
Rimes

C'est l'histoire de Loulou Lapierre Une p'tite mère ben ordinaire Qui travaille à temps partiel Comme femme de chambre dans un hôtel	A A B B	
Joyeux calvaire! - Les Cowboys Fringants		
ولا في بهالحب مصاري ولا ممكن فيه ليرات ولا ممكن في اراضي ولا فيه مجوهرات	A B A B	
Ziad Rahbani - بلا ولا شي		

Rimes

C'est l'histoire de Loulou Lapierre Une p'tite mère ben ordinaire Qui travaille à temps partiel Comme femme de chambre dans un hôtel	A A B B	
Joyeux calvaire! - Les Cowboys Fringants		
ولا في بهالحب مصاري ولا ممكن فيه ليرات ولا ممكن في اراضي ولا فيه مجوهرات	A B A B	
بلا ولا شي - Ziad Rahbani		
There’s something in this sound that takes me far It’s like a special song Can move my mood along But I cannot say you’ll hear through my guitar	A B B A	
It Runs Through Me - Tom Misch		

Rimes

C'est l'histoire de Loulou Lapierre Une p'tite mère ben ordinaire Qui travaille à temps partiel Comme femme de chambre dans un hôtel Joyeux calvaire! - Les Cowboys Fringants	A A B B	
ولا في بهالحب مصاري ولا ممكن فيه ليرات ولا ممكن في اراضي ولا فيه مجوهرات Ziad Rahbani - بلا ولا شي	A B A B	
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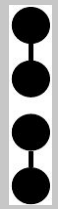
Rimes

C'est l'histoire de Loulou Lapierre Une p'tite mère ben ordinaire Qui travaille à temps partiel Comme femme de chambre dans un hôtel Joyeux calvaire! - Les Cowboys Fringants	A A B B	
ولا في بهالحب مصاري ولا ممكن فيه ليرات ولا ممكن في اراضي ولا فيه مجوهرات Ziad Rahbani - بلا ولا شي	A B A B	
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Rimes

C'est l'histoire de Loulou Lapierre Une p'tite mère ben ordinaire Qui travaille à temps partiel Comme femme de chambre dans un hôtel	A A B B	
Joyeux calvaire! - Les Cowboys Fringants		
ولا في بهالحب مصاري ولا ممكن فيه ليرات ولا ممكن في اراضي ولا فيه مجوهرات	A B A B	
Ziad Rahbani - بلا ولا شي		
There’s something in this sound that takes me far It’s like a special song Can move my mood along But I cannot say you’ll hear through my guitar	A B B A	
It Runs Through Me - Tom Misch		

Une petite histoire

TW: maths!

Théorème: Une loi distributive entre deux monades induit une structure de monade composée.

Théorème: Une loi distributive entre deux monades induit une structure de monade composée.

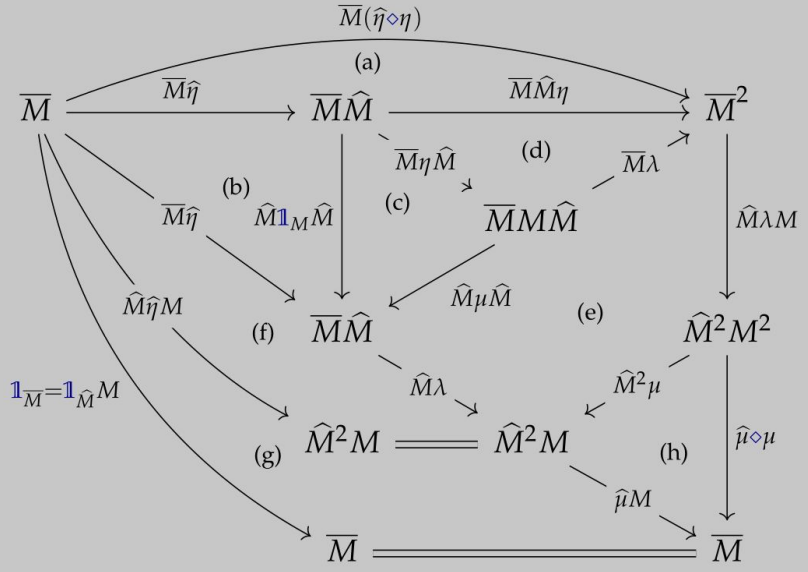
$$(\widehat{\mu} \diamond \mu) \circ \widehat{M}\lambda M \circ \overline{M}(\widehat{\eta} \diamond \eta) = \mathbb{1}_{\overline{M}} \qquad (\widehat{\mu} \diamond \mu) \circ \widehat{M}\lambda M \circ (\widehat{\eta} \diamond \eta)\overline{M} = \mathbb{1}_{\overline{M}}$$

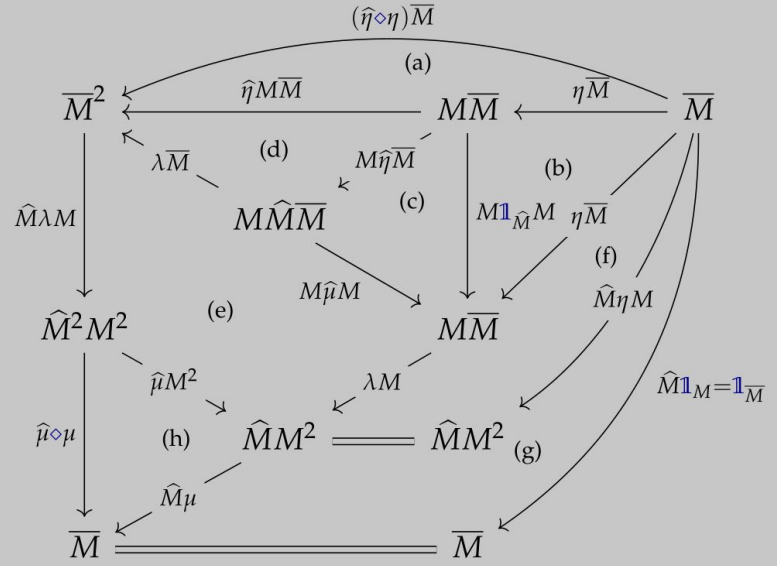
$$(\widehat{\mu} \diamond \mu) \circ \widehat{M}\lambda M \circ (\widehat{\mu} \diamond \mu)\overline{M} \circ \widehat{M}\lambda M\overline{M} = (\widehat{\mu} \diamond \mu) \circ \widehat{M}\lambda M \circ \overline{M}(\widehat{\mu} \diamond \mu) \circ \overline{M}\widehat{M}\lambda M$$

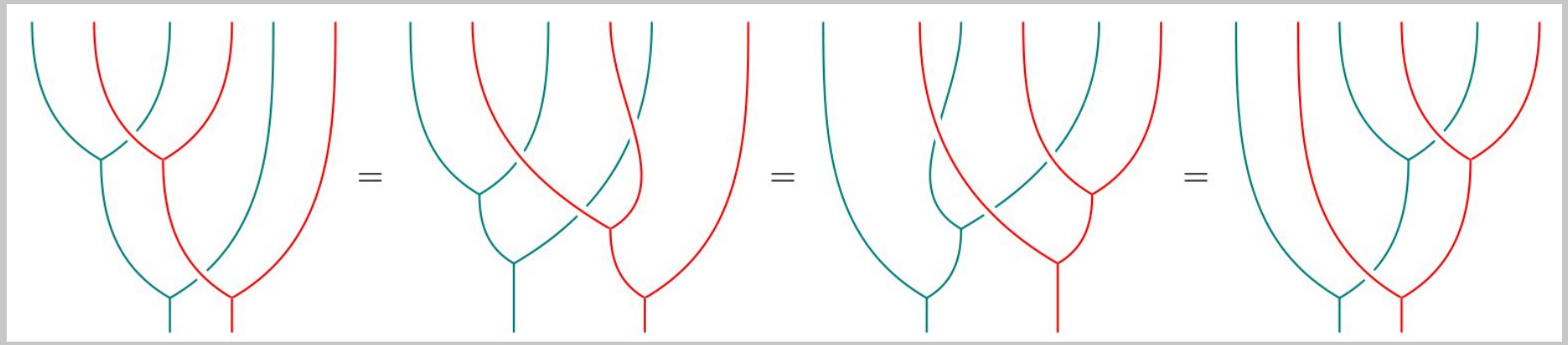
Théorème: Une loi distributive entre deux monades induit une structure de monade composée.

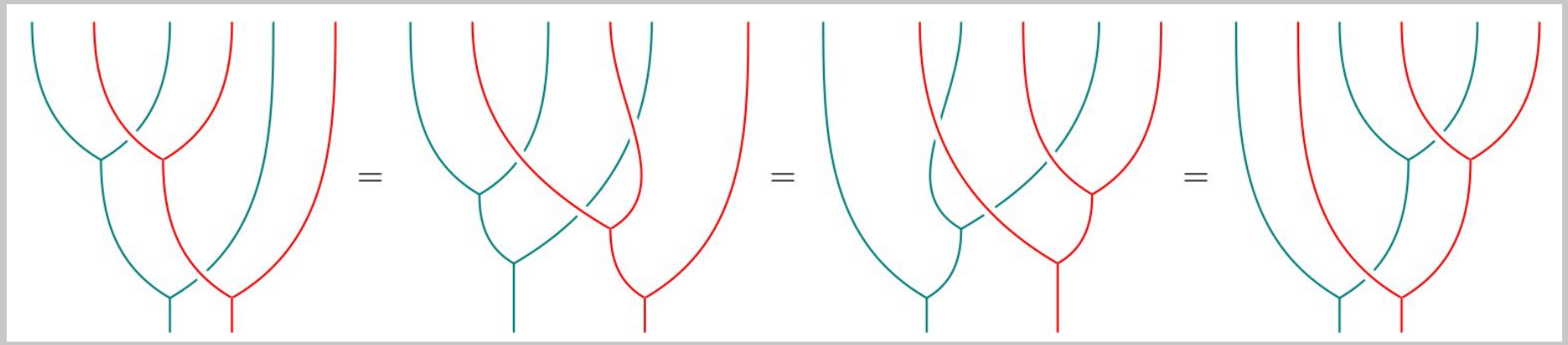
$$(\widehat{\mu} \diamond \mu) \circ \widehat{M}\lambda M \circ \overline{M}(\widehat{\eta} \diamond \eta) = \mathbb{1}_{\overline{M}}$$

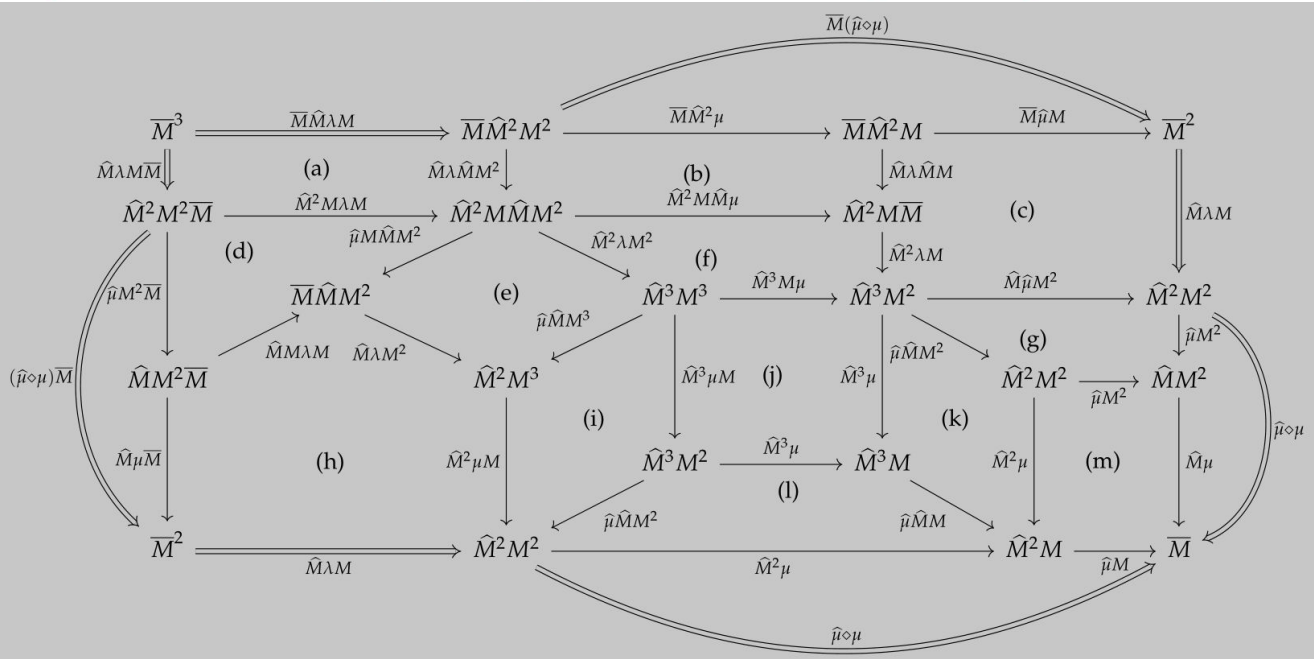
$$(\widehat{\mu} \diamond \mu) \circ \widehat{M}\lambda M \circ (\widehat{\eta} \diamond \eta)\overline{M} = \mathbb{1}_{\overline{M}}$$







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$\widehat{M}^2M\overline{M}$
$\overline{M}\widehat{M}M^2$
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$\widehat{M}^2M^2$
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$\widehat{M}^2M$
$\overline{M}$
$\overline{M}(\widehat{\mu}\diamond\mu)$
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$\overline{M}\widehat{M}^2\mu$
$\overline{M}\widehat{\mu}M$
$\widehat{M}\lambda M\overline{M}$
$\widehat{M}\lambda\widehat{M}M^2$
$\widehat{M}\lambda\widehat{M}M$
$\widehat{M}\lambda M$
$\widehat{M}^2M\lambda M$
$\widehat{M}^2M\widehat{M}\mu$
$\widehat{\mu}M\widehat{M}M^2$
$\widehat{M}^2\lambda M^2$
$\widehat{M}^2\lambda M$
$\widehat{\mu}M^2\overline{M}$
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$\widehat{M}\widehat{\mu}M^2$
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$\widehat{\mu}M^2$
$(\widehat{\mu}\diamond\mu)\overline{M}$
$\widehat{M}M\lambda M$
$\widehat{M}\lambda M^2$
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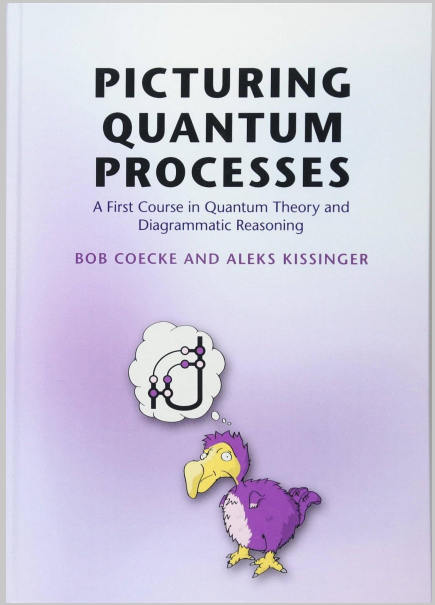
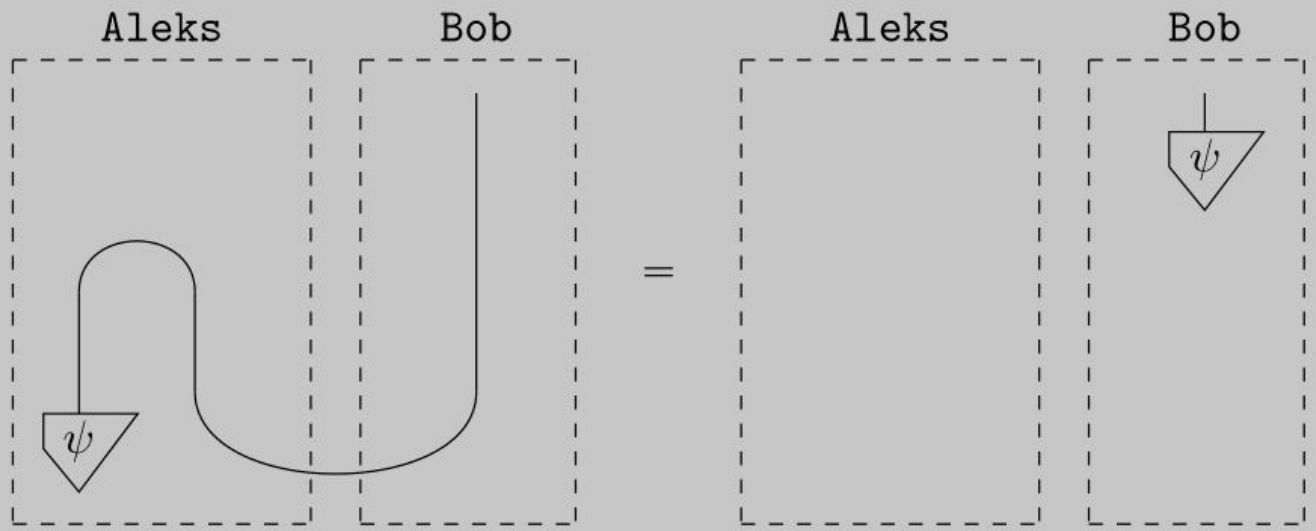
Exemples

Procédés Quantiques



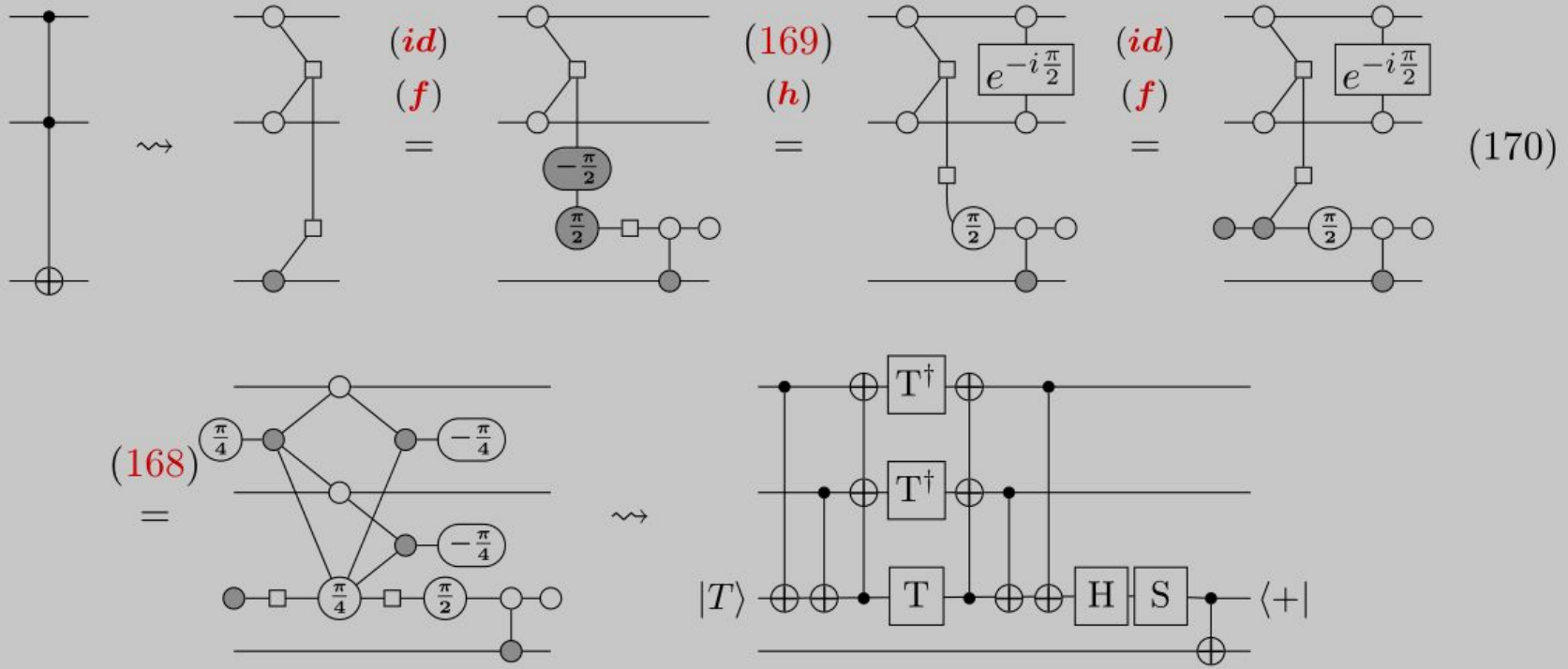
Quantum Teleportation



Liens: [article](), [bouquin](), [NLP quantique](), [blog]()

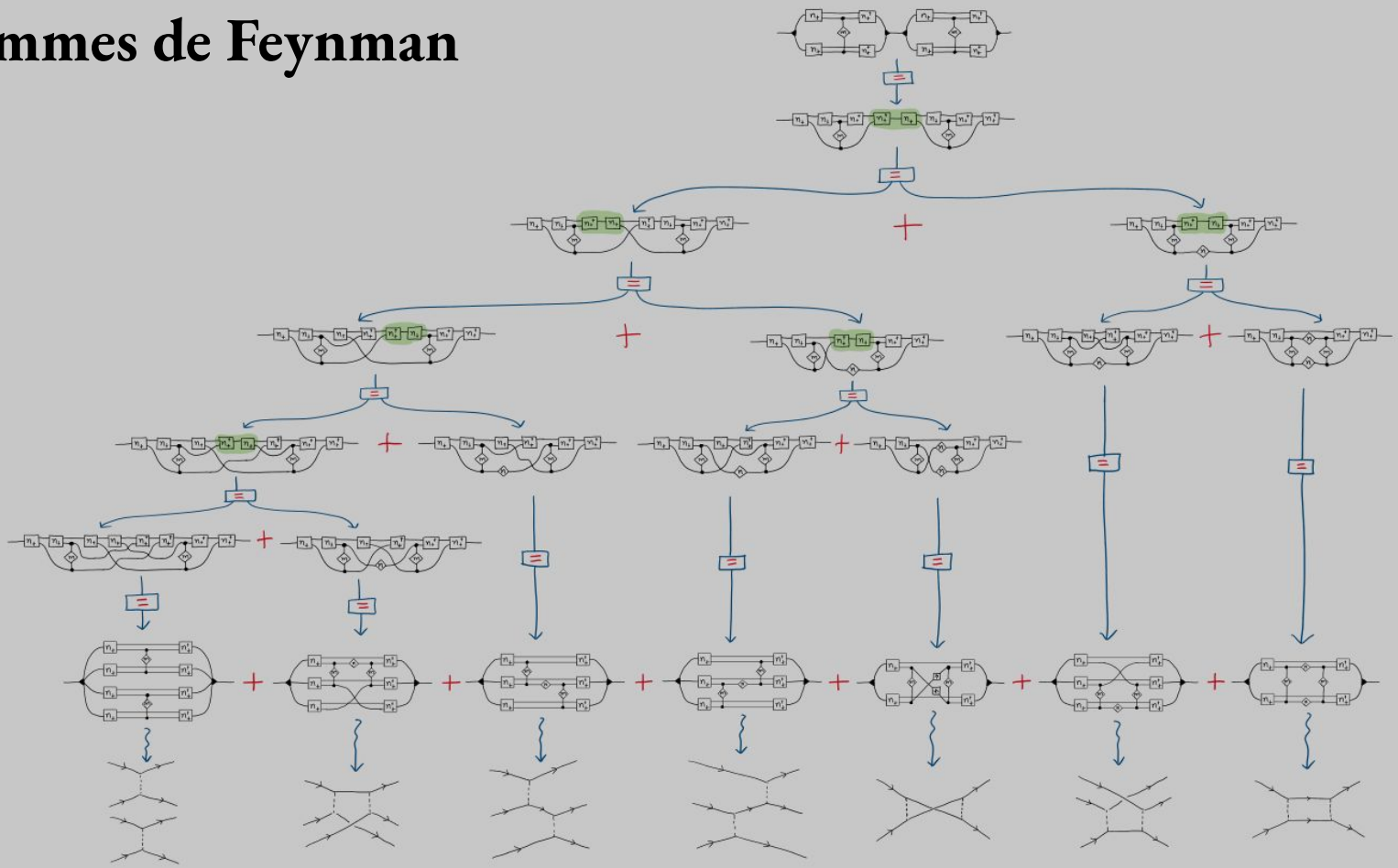
Circuits Quantiques

We can now rewrite the Toffoli gate to a more efficient construction:



Liens: article, communauté, implémentation Julia, implémentation Python

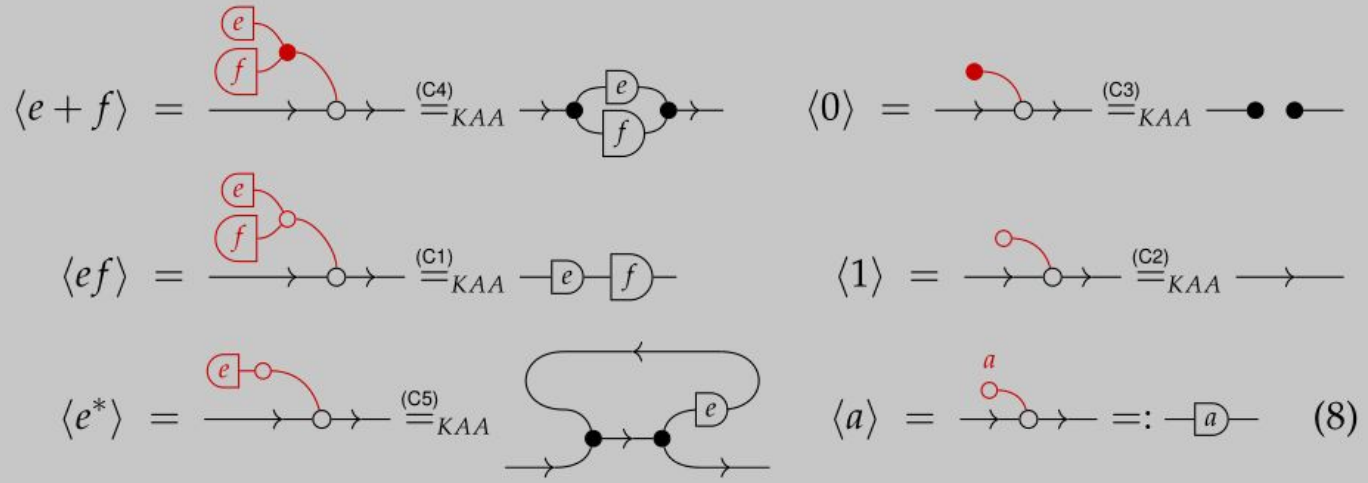
Diagrammes de Feynman



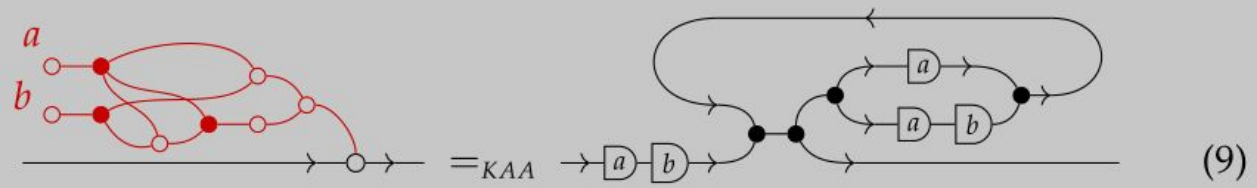
Liens : article

Figure 1. Composition of categorical Feynman diagrams, cf. Section 4.4.

Automates



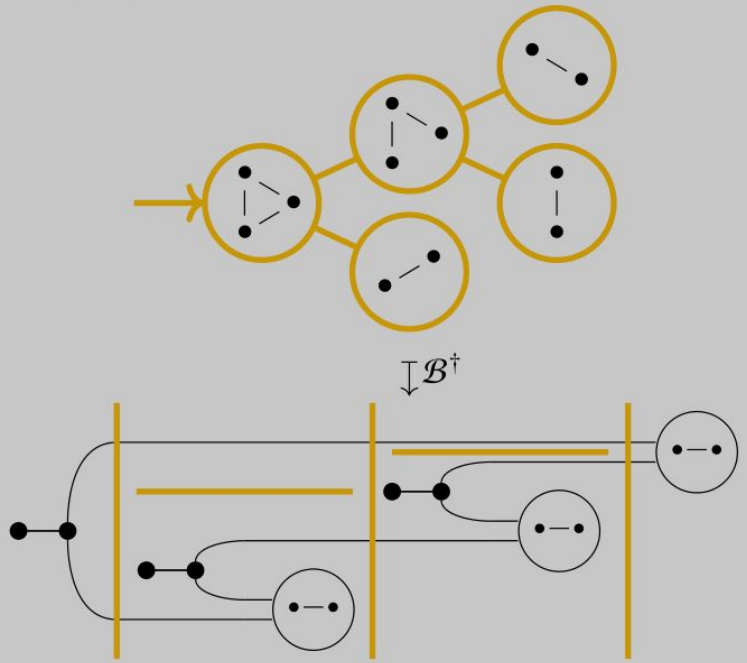
For example, $\langle ab(a+ab)^* \rangle$ =



Liens: article, article (automates probabilistes)

Monoidal Width

Example 5.16. *The 3-clique has a branch decomposition as shown on the top. The corresponding monoidal decomposition is shown below it.*



Théorèmes

$$\mathsf{twd}(G) \leq \mathsf{mtwd}(g) \leq 2 \cdot \mathsf{twd}(G)$$

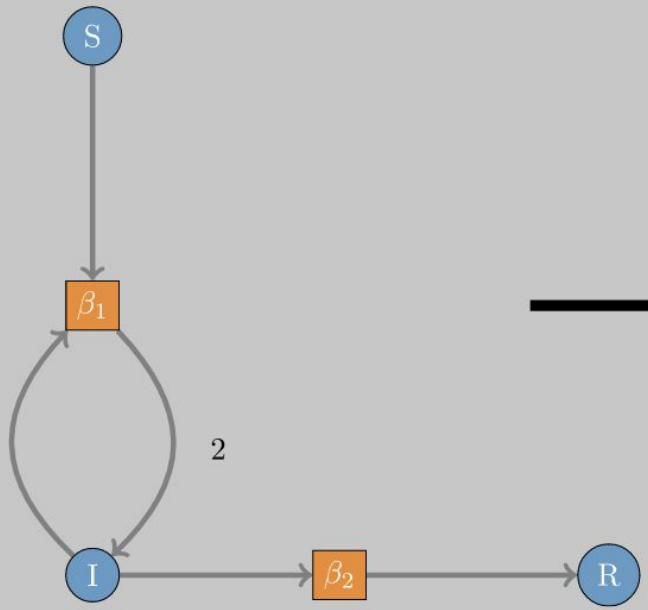
$$\tfrac{1}{2} \cdot \mathsf{bwd}(G) \leq \mathsf{mwd}(g) \leq \mathsf{bwd}(G) + 1$$

$$\mathsf{pwd}(G) = \mathsf{mpwd}(g)$$

Liens: article

Modélisation Scientifique

Petri



F

Dynam

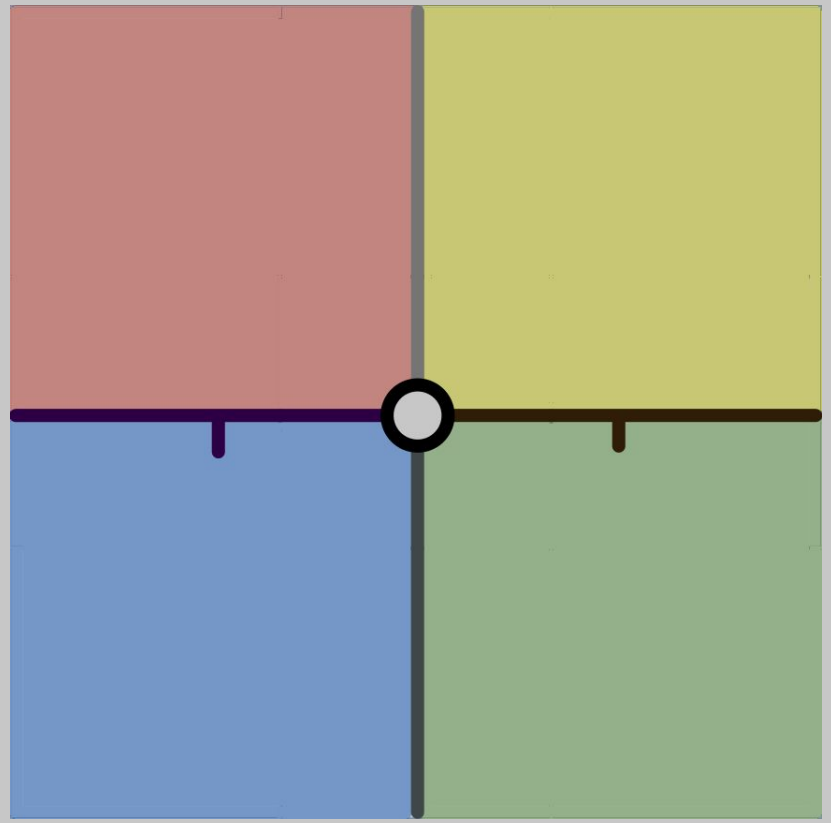
$$\dot{S} = \beta_1 SI$$

$$\dot{I} = \beta_1 SI - \beta_2 I$$

$$\dot{R} = \beta_2 I$$

Liens: [blogpost](), [AlgebraicJulia]()

Logique en Couleurs



$$\frac{a \; R \; b}{f(a) \; S \; g(b)}$$

Liens: conférence, article, thésard

Merci !