Keywords
higher category theory, concurrency, message-passing, types, Curry-Howard

ABSTRACT
We present an approach to modeling computational calculi using higher category theory. While the paper focuses on applications to the mobile process calculi, and more specifically, the π-calculus, because they provide unique challenges for categorical models, the approach extends smoothly to a variety of other computational calculi, including important milestones such as the λ-calculus. One of the key contributions is a method of restricting rewrites to specific contexts inspired by catalysis in chemical reactions.

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Higher category models of mobile process calculi

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1. INTRODUCTION
TBD

1.0.1 *Organization of the rest of the paper*
TBD

2. THE CALCULUS
Some examples of process expressions.

2.1 Our running process calculus
2.1.1 *Syntax*
TBD

2.1.2 *Free and bound names*
TBD

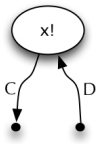
2.1.3 *Structural congruence*
TBD

2.1.4 *Operational Semantics*
TBD

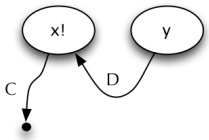
2.1.5 *Bisimulation*
TBD

3. CATEGORICAL MACHINERY
TBD

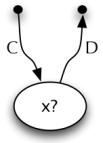
4. THE INTERPRETATION
TBD



Interpreting names a morphisms, x : J -> D* ⊠ C
Figure 1: Interpretation of output



That means we can interpret output, x!(y), as connecting a source to the input of the morphism.
Figure 2: Interpretation of output - again

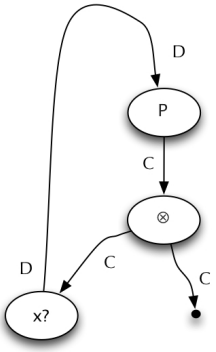


And the adjoint morphism, x : D* ⊠ C -> J, corresponds to input
Figure 3: Interpretation of input

5. CONCLUSIONS AND FUTURE WORK
TBD

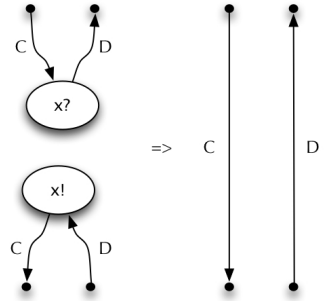
Acknowledgments.. TBD

6. REFERENCES



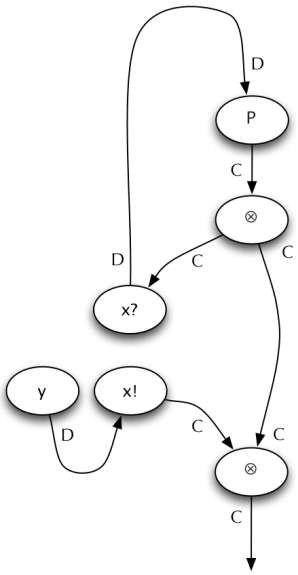
This provides the interpretation of x?(y)P.

Figure 4: Interpretation of input guarded process



The co-unit of the adjunction provides a mechanism for synchronization and data flow.

Figure 6: Interpretation of adjunction-based rewrite template



This provides the interpretation of x?(z)P | x!(y).

Figure 5: Interpretation of basic π-calculus redex