Exponential Free Typed Böhm Theorem

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In [DP01], Dosen and Petric called Statman's "Typical Ambiguity theorem" [Sta83] *typed Böhm theorem*. Moreover, they gave a new proof of the theorem based on set-theoretical models of typed lambda calculus. In this paper, we give the linear version of the typed Böhm theorem: given two closed intuitionistic implicational proof nets that have different cut-free η-long normal forms, we can have a context that separates the two proof nets in a clear way.
Such a context is the composition of the following contexts and type instantiations:

1. contexts that decrease the orders of proof nets
2. type instantiation operators
   In these operators additive connectives may occur.
3. choice contexts
   These contexts can pick up obviously different proof nets by exploiting the information of given different two proof nets with an order less than fourth order.
4. The final type instantiation and context
   You can choose any type and any two proof nets with the type.

References

[DP01] Kosta Dosen and Zoran Petric.
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[Sta83] R. Statman. λ-definable functionals and $\beta\eta$-conversion. *Arch. math. Logik*, 23:21-26. 1983.