

Translation from Multi-Staged Calculus to Context Calculus

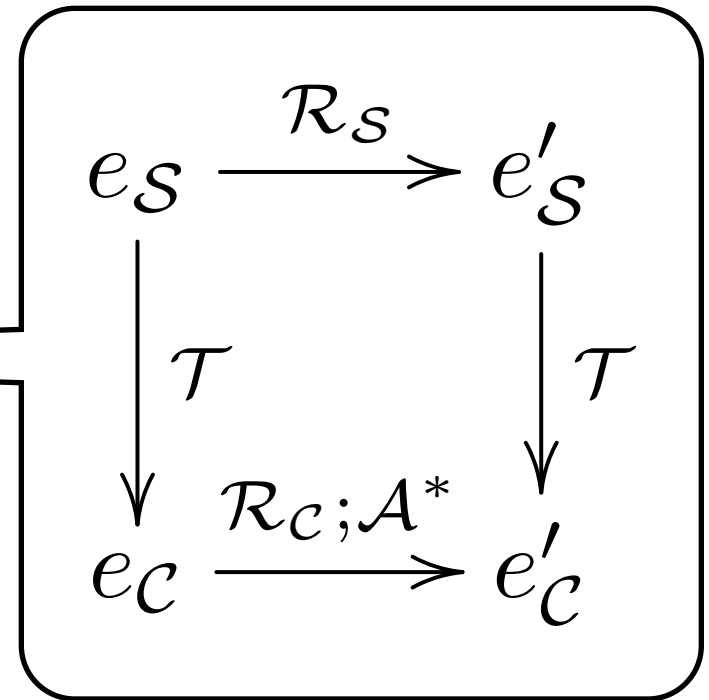
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Multi-Staged Calculus

$$\lambda_{\mathcal{S}} \quad e := i \mid x \mid \lambda x.e \mid e e \mid$$
$$\text{box } e \mid \text{unbox } e \mid \text{run } e$$


Context Calculus

$$\lambda_{\mathcal{C}} \quad e := i \mid x \mid \lambda x.e \mid e e \mid$$
$$\delta X.e \mid e \odot e$$


Simulation Property

Example

$\text{box } e \mapsto \lambda\rho.e$
 $\text{unbox } e \mapsto e ()$

$\text{box } (\lambda x.(\text{unbox } (\text{box } x))) \xrightarrow{\mathcal{R}_S} \text{box } (\lambda x.x)$

$\downarrow \mathcal{T}$

$\downarrow \mathcal{T}$

$(\delta H.\lambda\rho.\lambda x.(H ())) \odot (\lambda\rho'.x) \xrightarrow{\mathcal{R}_C} \lambda\rho.\lambda x.((\lambda\rho'.x) ())$

$(\lambda\rho.e) () \xrightarrow{\mathcal{A}} [()/rho]e$
 Admin Reduction

$\lambda\rho.\lambda x.x$