Note that as a matter of convention, I write $(s\ \maltese)$ to mean "delete this tube if the resulting instantiation mentions $\maltese$" (it's how I implement $\forall$).

Projecting the cap

CoeFcom/cap

$$\frac{(s\ r') = (s'\ r') \qquad (s\ x) \neq (s'\ x) \qquad (s_i\ x) \neq (s'_i\ x)}{\begin{array}{c}(\mathsf{coe}^{r \rightsquigarrow r'}_{[x]\ (\mathsf{fcom}^{(s\ x) \rightsquigarrow (s'\ x)}\ (A\ x)\ \overrightarrow{[(s_i\ x)=(s'_i\ x) \hookrightarrow [z]\ (B_i\ x\ z)]})}\ M) \\ \mapsto \\ (\mathsf{gcom}^{r \rightsquigarrow r'}_{[x]\ (A\ x)}\ M\ \overrightarrow{[(s_i\ \maltese) = (s'_i\ \maltese) \hookrightarrow [x]\ (\mathsf{coe}^{(s'\ x) \rightsquigarrow (s\ x)}_{[z]\ (B_i\ x\ z)}\ (\mathsf{coe}^{r \rightsquigarrow x}_{[x]\ (B_i\ x\ (s\ x))}\ M))]}\ [(s\ \maltese) = (s'\ \maltese) \hookrightarrow [x]\ (\mathsf{coe}^{r \rightsquigarrow x}_{[x]\ (A\ x)}\ M)])\end{array}}$$

Projecting the tube

CoeFcom/tube

$$\frac{\begin{array}{c}(s\ r') \neq (s'\ r') \qquad k \text{ min s.t. } (s_k\ r') = (s'_k\ r') \qquad (s\ x) \neq (s'\ x) \qquad (s_i\ x) \neq (s'_i\ x) \\ O \triangleq (\mathsf{hcom}^{(s'\ r) \rightsquigarrow (s\ r)}_{(A\ r)}\ (\mathsf{cap}^{(s\ r) \leftsquigarrow (s'\ r)} M\ \overrightarrow{[(s_i\ r) = (s'_i\ r) \hookrightarrow [z]\ (B_i\ r\ z)]})\ \overrightarrow{[(s_i\ r) = (s'_i\ r) \hookrightarrow [z]\ (\mathsf{coe}^{z \rightsquigarrow (s\ r)}_{[z]\ (B_i\ r\ z)}\ (\mathsf{coe}^{(s'\ r) \rightsquigarrow z}_{[z]\ (B_i\ r\ z)}\ M))]}) \\ P \triangleq (\mathsf{gcom}^{r \rightsquigarrow r'}_{[x]\ (A\ x)}\ O\ \overrightarrow{[(s_i\ \maltese) = (s'_i\ \maltese) \hookrightarrow [x]\ (\mathsf{coe}^{(s'\ r') \rightsquigarrow (s\ r')}_{[z]\ (B_i\ r'\ z)}\ (\mathsf{coe}^{r \rightsquigarrow x}_{[x]\ (B_i\ x\ (s'\ x))}\ M))]}, [(s\ \maltese) = (s'\ \maltese) \hookrightarrow [x]\ (\mathsf{coe}^{r \rightsquigarrow x}_{[x]\ (A\ x)}\ M)])\end{array}}{\begin{array}{c}(\mathsf{coe}^{r \rightsquigarrow r'}_{[x]\ (\mathsf{fcom}^{(s\ x) \rightsquigarrow (s'\ x)}\ (A\ x)\ \overrightarrow{[(s_i\ x)=(s'_i\ x) \hookrightarrow [z]\ (B_i\ x\ z)]})}\ M) \\ \mapsto \\ (\mathsf{gcom}^{(s\ r') \rightsquigarrow (s'\ r')}_{[z]\ (B_k\ r'\ z)}\ P\ \overrightarrow{[(s_i\ \maltese) = (s'_i\ \maltese) \hookrightarrow [z]\ (\mathsf{coe}^{(s'\ r') \rightsquigarrow z}_{[z]\ (B_i\ r'\ z)}\ (\mathsf{coe}^{r \rightsquigarrow r'}_{[x]\ (B_i\ x\ (s'\ x))}\ M))]}\ [r = r' \hookrightarrow [z]\ (\mathsf{coe}^{(s'\ r') \rightsquigarrow z}_{[z]\ (B_k\ r'\ z)}\ (\mathsf{coe}^{r \rightsquigarrow r'}_{[x]\ (B_k\ x)(s'\ x)}\ M))])\end{array}}$$

Within this case, there are several sub-cases depending on what the dimensions involved are; but it is not yet clear to me whether it will be an advantage to expand them here.