# A Exhaustive list of differences between the paper and the mechanization

## A.1 Additions

- We define freshness for $\overline{a}$'s and $A$'s.
- Declarative and algorithmic gen functions are defined directly (as embed block in HdmDefs.ott, exports to HdmDefs.v).
- Metarule dealing with the well-formedness of $\overline{a}$'s: WfDEnvDA.

## A.2 Changes

- Because Ott required us to specify type variables for the declarative system separately from the algorithmic one, we annotate type variables in the declarative system with a caret as well. Note that against the convention of the paper, they cannot contain existential type variables.
- Subsumption: the signature is $\Gamma \to \sigma \to \sigma \to \mathcal{P}$ instead of $\Gamma \to \sigma \to \tau \to \mathcal{P}$ (but rules identical)
- Unification: as discussed
- Instantiation: as discussed
- Effects of locally nameless transformation:
  - Conversion to nameless abstractions: e_Lam, e_Let, S_Forall, DS_Forall, e_Lam.
  - DFrACons: quantifies cofinitely over $a$.
  - MonAbs: quantifies cofinitely over $x$, recursive judgment over $e$ opened with $x$.
  - MonLet: quantifies cofinitely over $x$, recursive judgment over $e2$ opened with $x$.
  - WfDTyAbs: quantifies cofinitely over $a$, recursive judgment over $\sigma$ opened with $a$.
  - SubSumpInst: quantifies cofinitely over $a$, recursive judgment over $\sigma_2$ opened with $a$, and then immediately with $\tau_1$ substituted for $a$ (effectively opening $\sigma_2$ with $T_1$).
  - InfAbs: quantifies cofinitely over $x$, recursive judgment over $e$ opened with $x$.
  - InfLet: quantifies cofinitely over $x$, recursive judgment over $e2$ opened with $x$.
  - InstPoly: quantifies cofinitely over $a$, recursive judgment over $S$ opened with $a$, and then immediately with $\widehat{\alpha}$ substituted for $a$ (effectively opening $S$ with $\widehat{\alpha}$).
  - WfTyAbs: quantifies cofinitely over $a$, recursive judgment over $S$ opened with $a$.