Containment problem

- Given G_1, G_2, $\quad T_m(G_1) \subseteq T_m(G_2)$?
- containement first reduced to emptiness for deterministic G_2

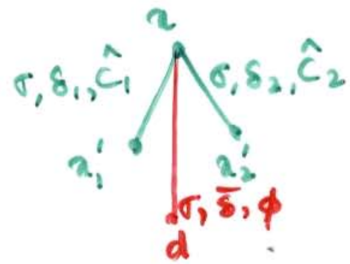
$$T_m(G_1) \subseteq T_m(G_2) \iff T_m(G_1 \,||\, \overline{G}_2^{\,c}) = \phi$$

(for nondeterministic G_2, containment undecidable)

- determinism $\iff$ given an activity state and an event label only one transition is enabled for a clock value

- completion: add a dump state "d" in G_2, and $\forall\, x \in X,\ \sigma \in \Sigma$: add transition $(x, \sigma, \bar{\delta}, \phi, d)$, where

$\bar{\delta} = \neg\left(\vee_i\, \delta_i\right)$, $\qquad (x, \sigma, \delta_i, \hat{c}_i, x_i') \in E$ for each i.



determinism $\iff \delta_1 \wedge \delta_2 = \text{false}$

- complementation: complement the markings of activity state
- composition: $G_1 || G_2 = \left(X_1 \times X_2,\ \Sigma_1 \cup \Sigma_2,\ C_1 \cup C_2,\ (x_{01}, x_{02}),\ X_{m1} \times X_{m2},\ E\right)$