C:/Users/torsten/GitHub/colore/ontologies/owltime/owltime_modular.clif

$$\forall t\ \forall e\ \Big[\Big[\big(\text{timeSpan}(t,e) \wedge \text{Interval}(t)\big) \rightarrow \text{during}(e,t)\Big]\Big]$$

$$\forall t\ \forall e\ \Big[\Big[\big(\text{timeSpan}(t,e) \wedge \text{Instant}(t)\big) \rightarrow \text{atTime}(e,t)\Big]\Big]$$

$$\forall t1\ \forall t2\ \forall e\ \Big[\Big[\big(\text{timeSpan}(t1,e) \wedge \text{Interval}(t1) \wedge \text{atTime}(e,t2)\big) \rightarrow \big(\text{inside}(t2,t1) \vee \text{begins}(t2,t1) \vee \text{ends}(t2,t1)$$

$$\forall t\ \forall t1\ \forall e\ \Big[\Big[\big(\text{timeSpan}(t,e) \wedge \text{Instant}(t) \wedge \text{atTime}(e,t1)\big) \rightarrow =(t,t1)\Big]\Big]$$

$$\forall e\ \forall t\ \Big[\big[\text{atTime}(e,t) \rightarrow \text{Instant}(t)\big]\Big]$$

$$\forall e\ \forall t\ \Big[\big[\text{during}(e,t) \rightarrow \text{Interval}(t)\big]\Big]$$

$$\forall e\ \forall t1\ \forall t2\ \Big[\Big[\big(\text{during}(e,t1) \wedge \text{inside}(t2,t1)\big) \rightarrow \text{atTime}(e,t2)\big]\Big]$$

$$\forall e\ \forall t\ \forall t1\ \Big[\Big[\big(\text{during}(e,t) \wedge \text{intDuring}(t1,t)\big) \rightarrow \text{during}(e,t1)\Big]\Big]$$

$$\forall t\ \forall x\ \Big[\Big[\text{inside}(t,x) \rightarrow \big(\text{Instant}(t) \wedge \text{Interval}(x)\big)\Big]\Big]$$

$$\forall t\ \forall x\ \Big[\Big[\text{beginsOrIn}(t,x) \leftrightarrow \big(\text{begins}(t,x) \vee \text{inside}(t,x)\big)\Big]\Big]$$

$$\forall t\ \forall t1\ \forall t2\ \forall x\ \Big[\Big[\big(\text{inside}(t,x) \wedge \text{begins}(t1,x) \wedge \text{ends}(t2,x) \wedge \text{ProperInterval}(x)\big) \rightarrow \big(\text{before}(t1,t) \wedge \text{before}(t,t2$$

$$\forall t\ \Big[\big[\text{Instant}(t) \rightarrow \text{TemporalEntity}(t)\big]\Big]$$

$$\forall t\ \Big[\big[\text{Interval}(t) \rightarrow \text{TemporalEntity}(t)\big]\Big]$$

$$\forall t\ \Big[\Big[\text{TemporalEntity}(t) \rightarrow \big(\text{Interval}(t) \vee \text{Instant}(t)\big)\Big]\Big]$$

$$\forall t\ \forall x\ \Big[\Big[\text{begins}(t,x) \rightarrow \big(\text{Instant}(t) \wedge \text{TemporalEntity}(x)\big)\Big]\Big]$$

$$\forall t\ \forall x\ \Big[\Big[\text{ends}(t,x) \rightarrow \big(\text{Instant}(t) \wedge \text{TemporalEntity}(x)\big)\Big]\Big]$$

$$\forall t\ \Big[\big[\text{Instant}(t) \leftrightarrow \text{begins}(t,t)\big]\Big]$$

$$\forall t\ \Big[\big[\text{Instant}(t) \leftrightarrow \text{ends}(t,t)\big]\Big]$$

$$\forall x\ \forall t1\ \forall t2\ \Big[\Big[\big(\text{TemporalEntity}(x) \wedge \text{begins}(t1,x) \wedge \text{begins}(t2,x)\big) \rightarrow =(t1,t2)\Big]\Big]$$

$$\forall x\ \forall t1\ \forall t2\ \Big[\Big[\big(\text{TemporalEntity}(x) \wedge \text{ends}(t1,x) \wedge \text{ends}(t2,x)\big) \rightarrow =(t1,t2)\Big]\Big]$$

$$\forall x\ \forall t1\ \forall t2\ \Big[\Big[\text{timeBetween}(x,t1,t2) \rightarrow \big(\text{TemporalEntity}(x) \wedge \text{Instant}(t1) \wedge \text{Instant}(t2)\big)\Big]\Big]$$

$$\forall t1\ \forall t2\ \Big[\Big[\neg\big(=(t1,t2)\big) \rightarrow \forall x\ \Big[\Big[\text{timeBetween}(x,t1,t2) \leftrightarrow \big(\text{begins}(t1,x) \wedge \text{ends}(t2,x)\big)\Big]\Big]\Big]\Big]$$

$$\forall x\ \forall t1\ \forall t2\ \left[\left[\left(\text{Interval}(x) \wedge \text{begins}(t1, x) \wedge \text{ends}(t2, x)\right) \rightarrow \neg\left(\text{before}(t2, t1)\right)\right]\right]$$

$$\forall x\ \forall t1\ \forall t2\ \left[\left[\left(\text{ProperInterval}(x) \wedge \text{begins}(t1, x) \wedge \text{ends}(t2, x)\right) \rightarrow \text{before}(t1, t2)\right]\right]$$

$$\forall t1\ \forall t2\ \left[\left[\left(\text{Instant}(t1) \wedge \text{Instant}(t2) \wedge \text{before}(t1, t2)\right) \rightarrow \exists x\ \left[\text{timeBetween}(x, t1, t2)\right]\right]\right]$$

$$\forall x\ \left[\left[\text{ProperInterval}(x) \leftrightarrow \left(\text{Interval}(x) \wedge \forall t1\ \forall t2\ \left[\left[\left(\text{begins}(t1, x) \wedge \text{ends}(t2, x)\right) \rightarrow \neg\left(=(t1, t2)\right)\right]\right]\right)\right]\right]$$

$$\forall t1\ \forall t2\ \left[\left[\text{before}(t1, t2) \rightarrow \neg\left(=(t1, t2)\right)\right]\right]$$

$$\forall t1\ \forall t2\ \left[\left[\text{before}(t1, t2) \rightarrow \neg\left(\text{before}(t2, t1)\right)\right]\right]$$

$$\forall t1\ \forall t2\ \forall t3\ \left[\left[\left(\text{before}(t1, t2) \wedge \text{before}(t2, t3)\right) \rightarrow \text{before}(t1, t3)\right]\right]$$