When are Description Logic Knowledge Bases Indistinguishable?

E. Botoeva, R. Kontchakov, V. Ryzhikov, F. Wolter and M. Zakharyaschev

1Free University of Bozen-Bolzano, Italy 2Birkbeck, University of London, UK 3University of Liverpool, UK

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### Query Entailment and Inseparability

Let $K_1$ and $K_2$ be knowledge bases: $K_i = (T_i, A_i)$

- $K_1$ $\Sigma$-query entails $K_2$ if for each CQ $q(\vec{x})$ over $\Sigma$ and each tuple $\vec{a}$ in $\text{ind}(K_2)$, $K_2 \models q(\vec{a})$ implies $K_1 \models q(\vec{a})$

- $K_1$ and $K_2$ are $\Sigma$-query inseparable, $K_1 \equiv_\Sigma K_2$, if $K_1$ $\Sigma$-query entails $K_2$ and $K_2$ $\Sigma$-query entails $K_1$

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### Games and Generating Structures

$G_i$ is a generating structure for $M_i$, if $M_i$ is the unravelling of $G_i$. (used in the combined approach to query answering)

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### Let’s play?

The goal of Player 2 is to reach the final state (double circle)
The goal of Player 1 is to avoid it