## Warsaw Workshop on Non-Standard Dark Matter: <br/> multicomponent scenarios and beyond

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## Observational Constraints on Decoupled Hidden Sectors

## Content :

Can dark matter properties be constrained if dark matter particles interact only very feebly with the Standard Model fields? The answer is yes. By studying both cosmological and astrophysical constraints, we show that stringent constraints on dark matter properties can be derived even if the dark matter sector is practically uncoupled from the Standard Model sector. By taking the Higgs portal model as a representative example, we study in detail scenarios where the hidden sector does not thermalize with the Standard Model sector but within itself, resulting in dark matter abundance determined by the freeze-out mechanism operating within the hidden sector.

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