

# Whispers from the Dark Universe - Particles & Fields in the Gravitational Wave Era

CLUSTER OF EXCELLENCE  
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DESY THEORY WORKSHOP

## WHISPERS FROM THE DARK UNIVERSE – PARTICLES & FIELDS IN THE GRAVITATIONAL WAVE ERA

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## Populating sequestered dark sector with ultra-relativistic bubbles

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We study Dark Matter production during first order phase transitions from bubble-plasma collisions. We focus on scenarios where the Dark Matter sector is secluded and its interaction with the visible sector (including the Standard Model) originates from dimension-five and dimension-six operators. We find that such DM is generally heavy and has a large initial velocity, leading to the possibility of DM being warm today. We differentiate between the cases of weakly and strongly coupled dark sectors, where, in the latter case, we focus on glueball DM, which turns out to have very distinct phenomenological properties. We also systematically compute the Freeze-In production of the dark sector and compare it with the bubble-plasma DM abundances.

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