



Contribution ID: 71

Type: **Talk**

## Probing very weakly coupled Dark Matter with gravitational waves

*Wednesday 25 August 2021 11:30 (30 minutes)*

I will discuss a novel scenario of Dark Matter production naturally connected with generation of gravitational waves. Dark Matter is modelled as a real scalar, which interacts with the hot primordial plasma through a portal coupling to another scalar field. For a particular sign of the coupling, this system exhibits an inverse second order phase transition. The latter leads to an abundant Dark Matter production, even if the portal interaction is so weak that the freeze-in mechanism is inefficient. The model predicts domain wall formation in the Universe, long time before the inverse phase transition. These domain walls have a tension decreasing with time, and completely disappear at the inverse phase transition, so that the problem of overclosing the Universe is avoided. The domain wall network emits gravitational waves with characteristics defined by those of Dark Matter. In particular, the peak frequency of gravitational waves is determined by the portal coupling constant, and falls in the observable range for currently planned gravitational wave detectors.

### Is this abstract from experiment?

No

### Name of experiment and experimental site

N/A

### Is the speaker for that presentation defined?

Yes

### Details

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### Internet talk

No

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**Session Classification:** D Cosmology, Astrophysics, Gravity, Mathematical Physics