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Dark Matter Bound State Formation in a \mathbb{Z}_2 Model with Light Dark Photon and Dark Higgs Boson

In this presentation, I will show the importance of the longitudinal polarization of the dark photon, or equivalently, the Goldstone in the formation of the dark matter bound state. The bound state formation through the "mono-pole" emission of a longitudinal dark photon will dominate the re-annihilation process, unlike the usual dark matter formation process calculations. I will also show some other details of the model and processes.

Primary authors: Dr TANG, Yi-Lei (KIAS); KO, pyungwon (Korea Inst. for Advanced Study (KIAS)); Dr MATSUI, Toshinori

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