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Observable gravitational waves in minimal scotogenic model

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We scrutinise the widely studied minimal scotogenic model of dark matter (DM) and radiative neutrino mass from the requirement of a strong First order electroweak phase transition (EWPT) and observable gravitational waves at future planned space-based experiments. The scalar DM scenario is similar to inert scalar doublet extension of the standard model where a strong first-order EWPT favours a portion of the low mass regime of DM which is disfavoured by the latest direct detection bounds. In the fermion DM scenario, we get newer region of parameter space which favours strong rst order EWPT as the restriction on mass ordering within inert scalar doublet gets relaxed. While such leptophilic fermion DM remains safe from stringent direct detection bounds, newly allowed low mass regime of charged scalar can leave tantalising signatures at colliders and can also induce charged lepton
flavour violation within reach of future experiments. While we get such new region of parameter space satisfying DM relic, strong first-order EWPT with detectable gravitational waves, light neutrino mass and other relevant constraints, we also improve upon previous analysis in a similar model by incorporating appropriate resummation eacts in eective nite temperature potential.

Primary authors: DASGUPTA, Arnab (School of Liberal Arts, Seoul National University of Science and Technology); BORAH, Debasish (Indian Institute of Technology Guwahati); Mr MAHANTA, Devabrat (Indian Institute of Technology, Guwahati); FUJIKURA, Kohei; KANG, Sin Kyu (Seoul-Tech)

Presenter: DASGUPTA, Arnab (School of Liberal Arts, Seoul National University of Science and Technology)

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