

First order electroweak phase transition and dark matter in (non)conformal Higgs portal models

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We study the electroweak phase transition in class of classically (non)conformal Higgs portal models, with and without Veltman conditions imposed for the scalar sector. Some of the models include also fermionic type dark sector, which can be related to dark matter or neutrino masses.

We find, by scanning the model parameter spaces, many realizations of the models, where the electroweak phase transition is strongly first order. The portal coupling is usually large in these cases, and particularly the Veltman conditions reduce suitable parameter space significantly. We impose constraints for the models, analyse the aspects of the fermionic dark sectors, and discuss about further analysis prospects.

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