



Universidade do Minho
Escola de Ciências

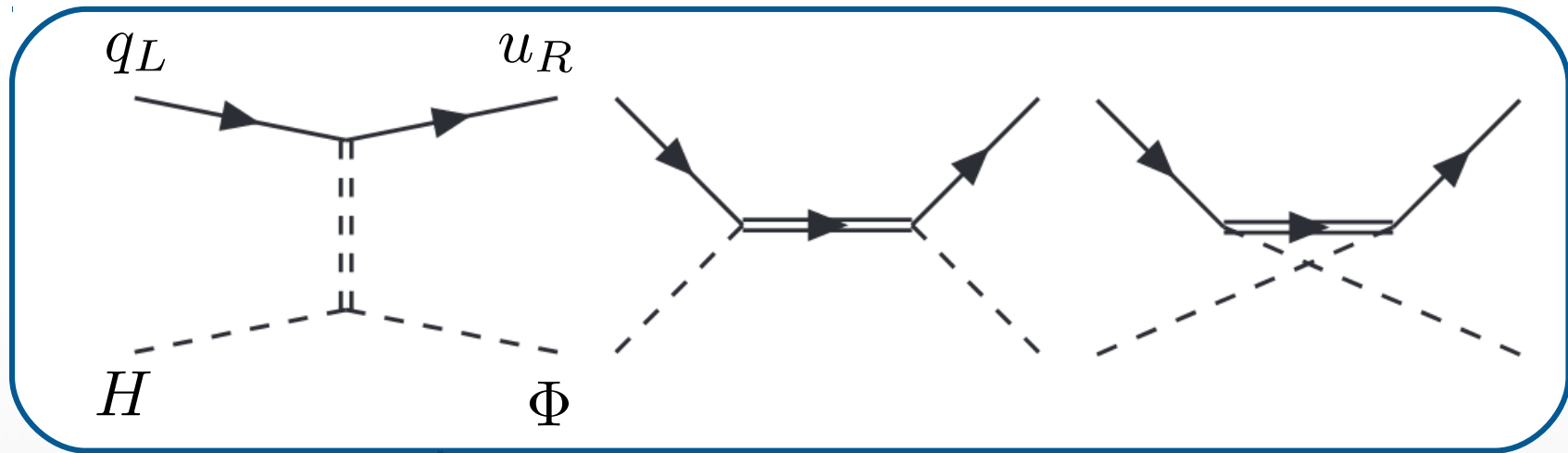
Gravitational wave and collider probes of extended Higgs sectors with a low cutoff

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Based on Ref. 1812.01901

SM+triplet (*pseudoscalar*)



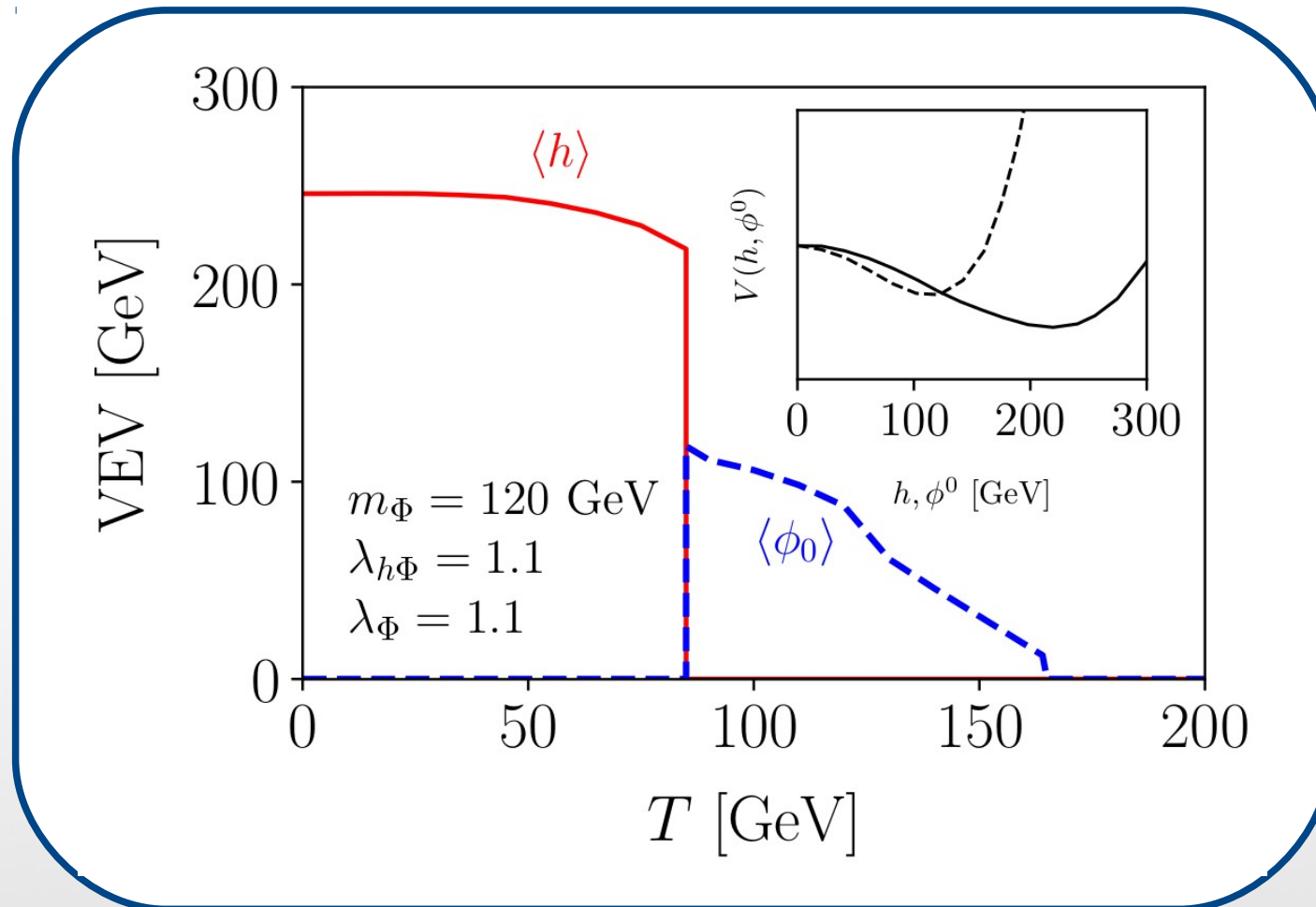
e.g. $SO(7)/G_2$ CHM

$$\frac{ic}{f} \overline{q_L} (H\Phi) u_R$$

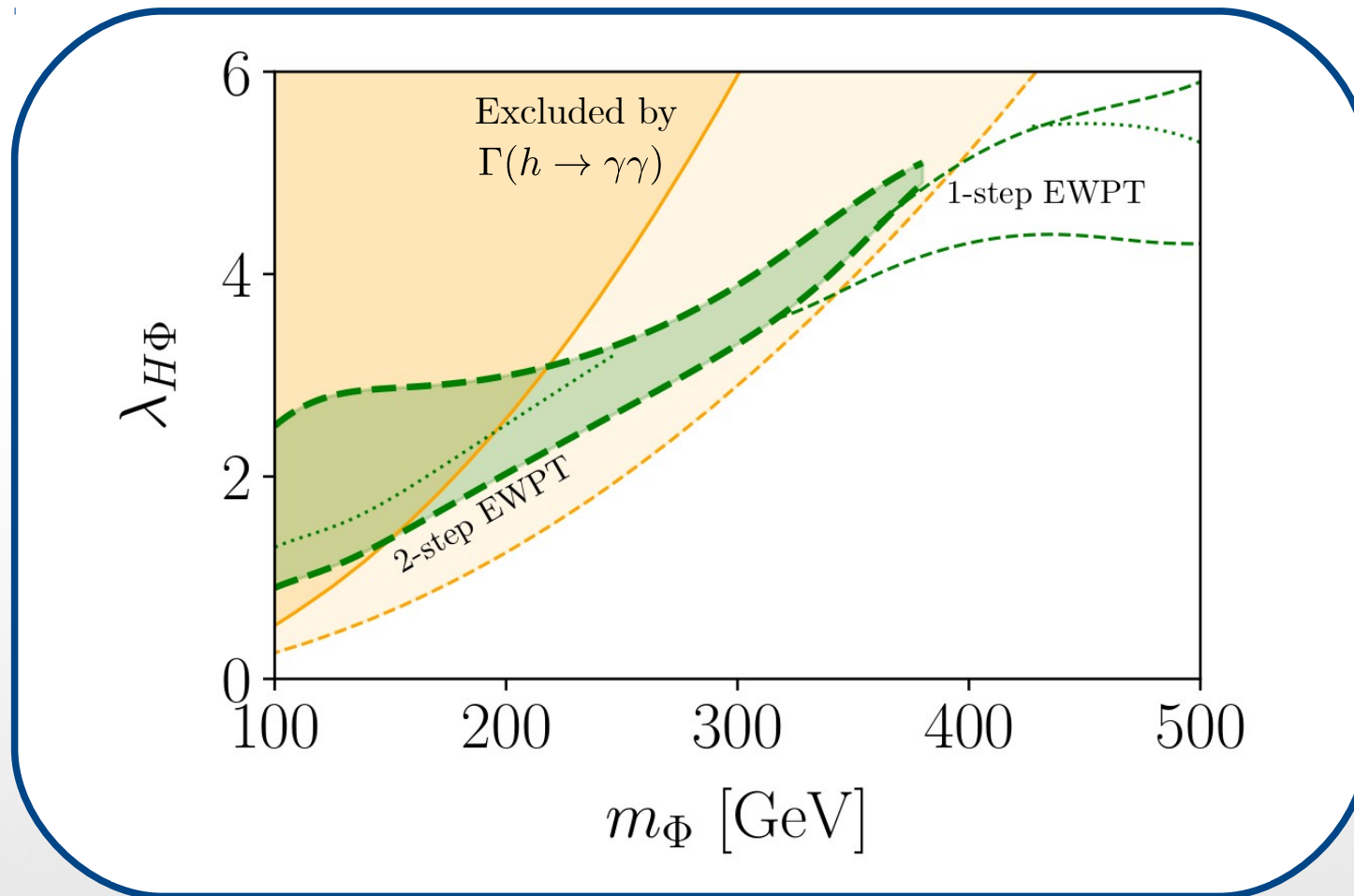
leads to significant
different phenomenology

... and can also trigger **EW baryogenesis**.

Produces the *obs.* baryon asymmetry for $c/f \sim 1\text{TeV}^{-1}$

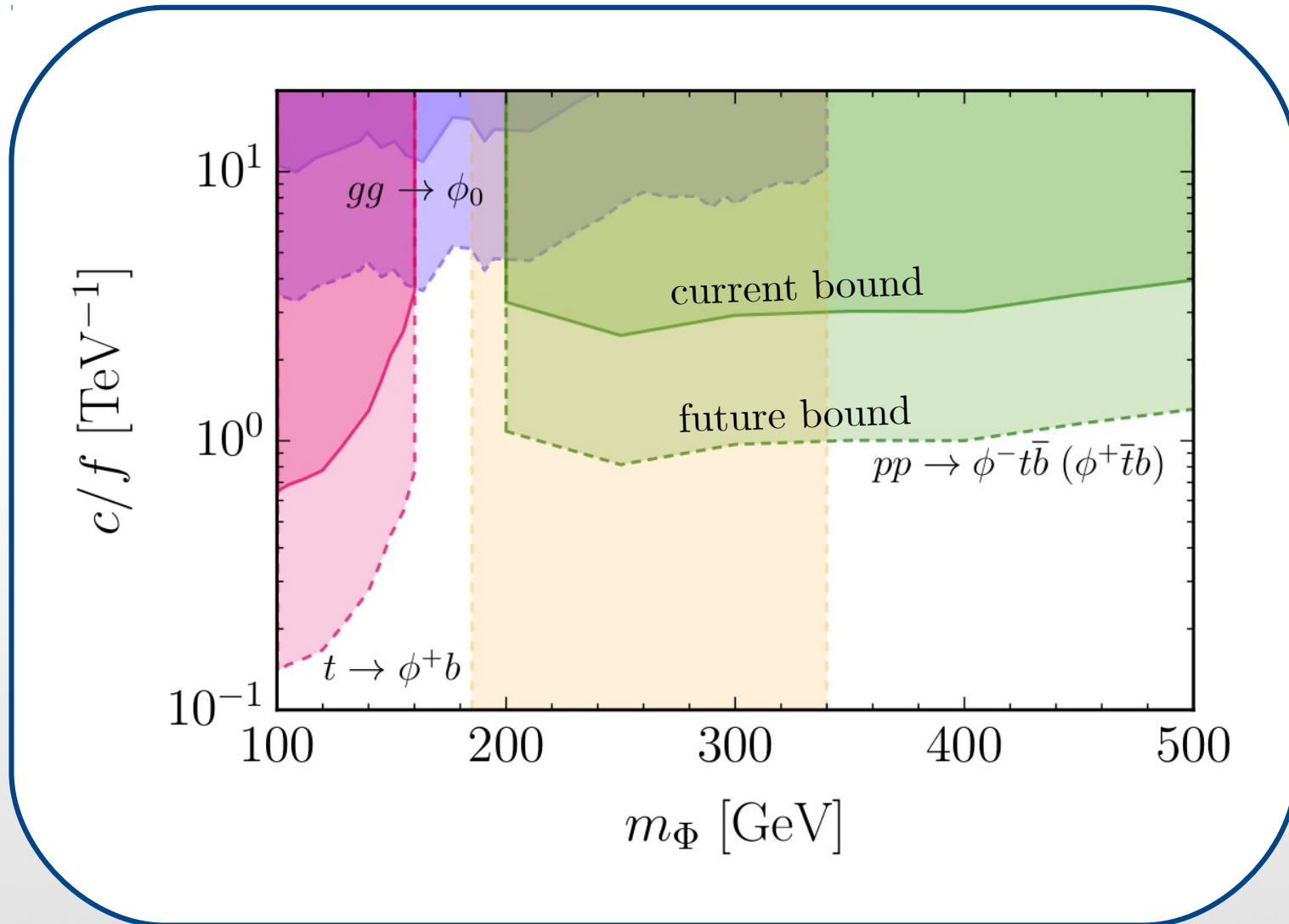


What are the consequences?

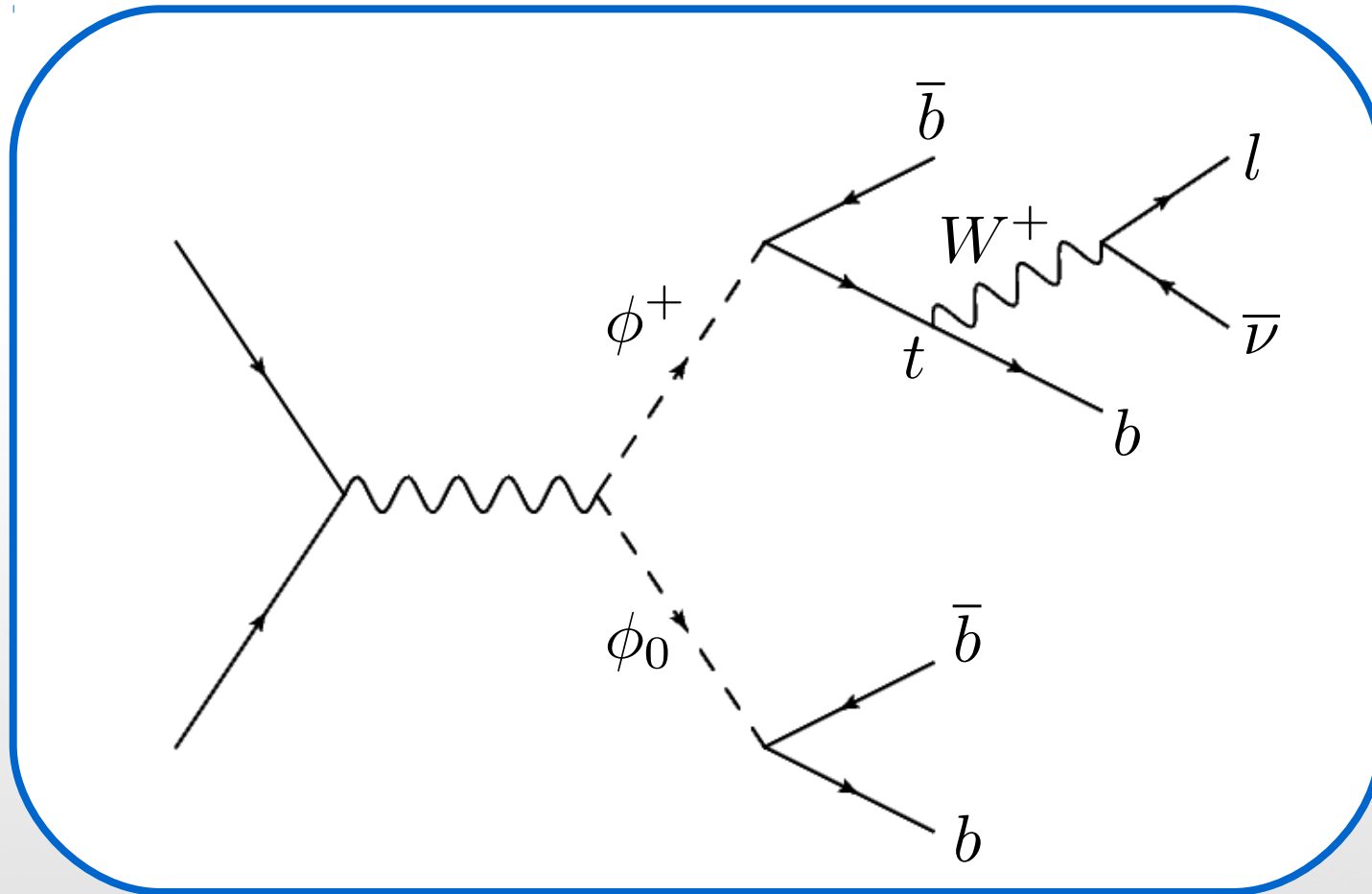
Gravitational Waves from 1st order strong PT

The model **can be probed** at future GW detectors.

LHC *complementary* searches



New analysis to probe key channel



Conclusions

- The triplet extension of SM provides a rich phenomenology.
- EW baryogenesis requires an additional source of CPV in the past.
- In this framework, **spontaneous CPV at finite temperature implies a signal at the LHC.**
- The whole parameter space where EW baryogenesis can occur (masses 185-340 GeV) **can be probed at the HL-LHC.**



Thank you very much for
your attention!

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