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# New spin 0 physics from TeV to THz

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Fundamental spinless particles are theoretically common yet experimentally rare. This talk presents an overview of my recent phenomenology program probing enigmatic spin 0 dynamics sensitive to new physics. The Higgs self-coupling may remarkably become directly accessible soon but LHC challenges demand continued innovation. Meanwhile, scalar leptons elegantly reconcile the muon g–2 tension and dark matter, and colliding light could enable decisive searches. Tau g–2 is equally important but often overlooked, where new physics modifications generically involve the Higgs field in SMEFT. Finally, axion searches are expanding beyond cavity haloscopes with interesting R&D proposals for broadband sensitivity near the THz window.

## Summary

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