

Physics discussion: Higgs Physics

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Discussion Questions:

1. How important is the argument: “We have to measure the Higgs because it is there.” ? **Do we need specific arguments** on sensitivity to BSM scenarios to justify a new collider for the Higgs boson or is it enough to argue that the measurements are scientifically important in their own right?
2. Are there compelling arguments for BSM corrections to the **major SM Higgs couplings** – to b , τ , W , Z , g , γ ?
3. Are there compelling arguments for BSM corrections to Higgs couplings to **second- and first-generation** fermions (c, s, μ, e) that are large enough to realistically observe ?
4. Are there compelling arguments for Higgs boson **exotic decays**? Which ones are the most important to search for? What range of branching ratios should we seek to probe?
5. Why is it important to measure the **Higgs self-coupling**? What accuracy is needed?
6. To justify a \$10B-scale project for Higgs, we will need to argue with our colleagues doing neutrino and cosmic particle physics that the Higgs is **Problem #1**. How can we argue this?