Proposal for single Higgs channel for ESPP 2025

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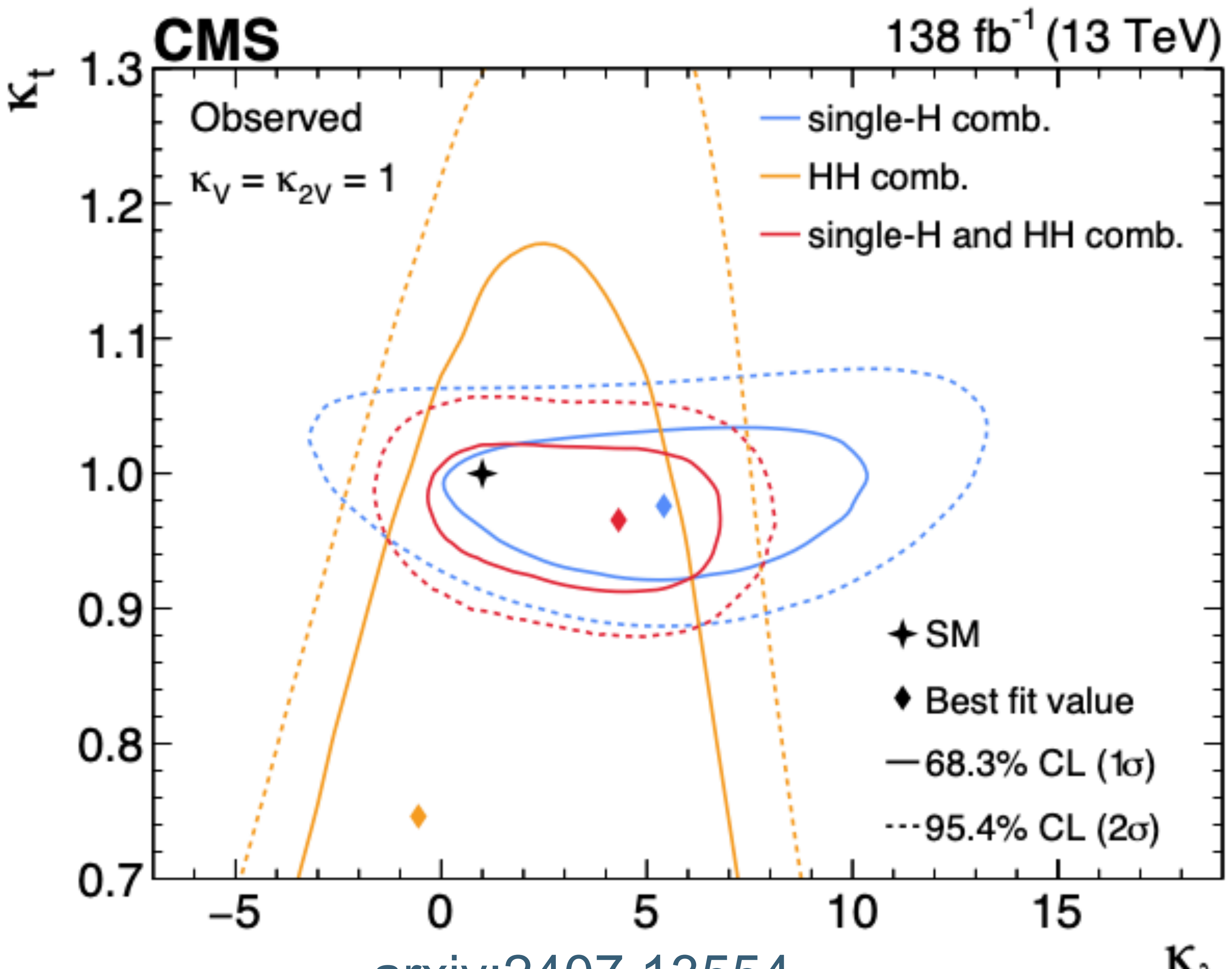
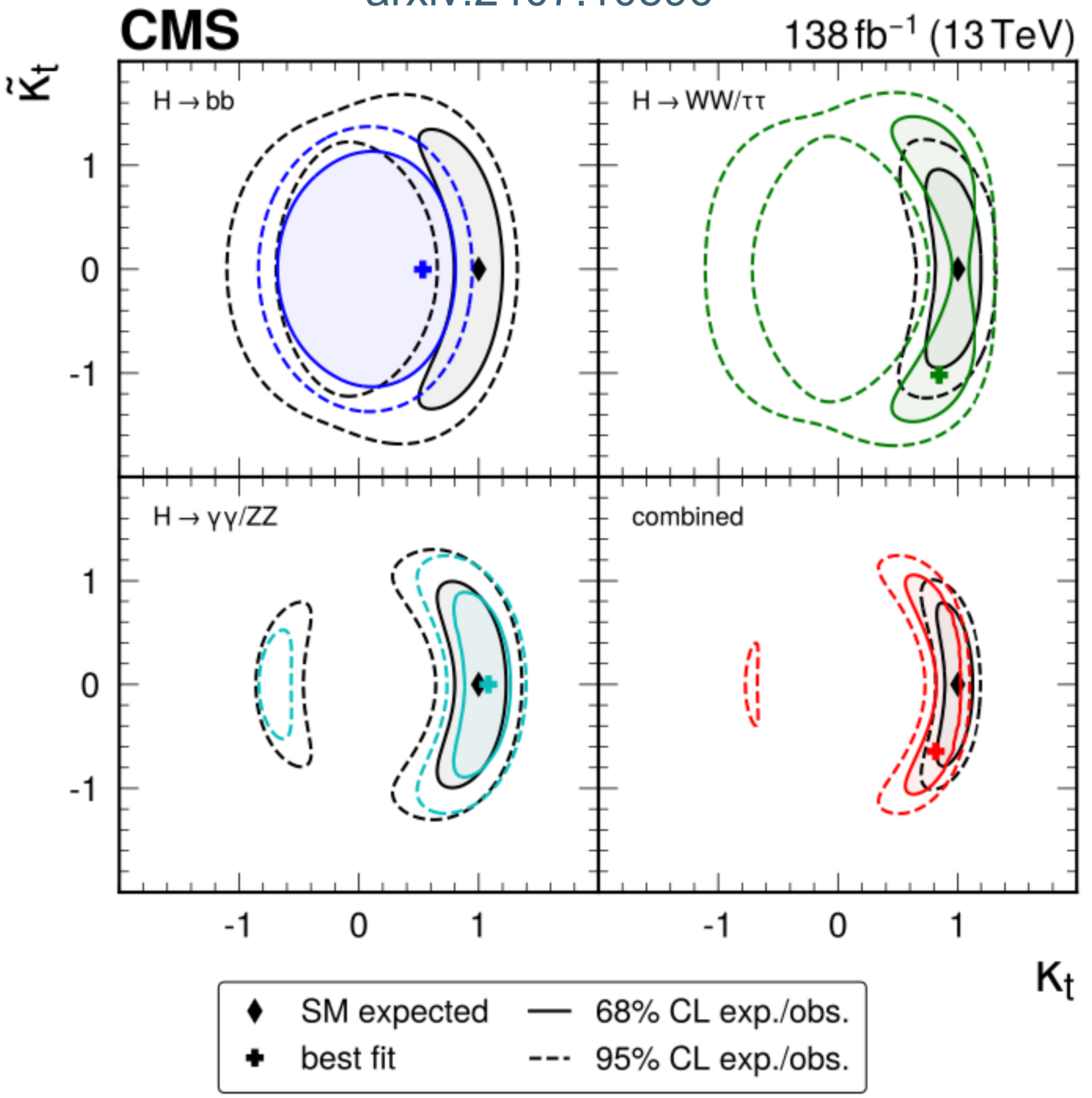
Motivation

- The objective: improve constraints from in κ_λ - κ_t plain with single Higgs channels



arxiv:2407.13554

arxiv:2407.10896



- The best channel: ttH, with $H \rightarrow \gamma\gamma$ decay

Analysis strategy

- The analysis observable - $m_{\gamma\gamma}$
- Train BDT for categorization to improve sensitivity
- Data driven background estimation in $m_{\gamma\gamma}$
- Other H final (4L) states might be added, depends on the time scale
- Study different scenarios, dependence on $m_{\gamma\gamma}$ resolution

arxiv:2103.06956