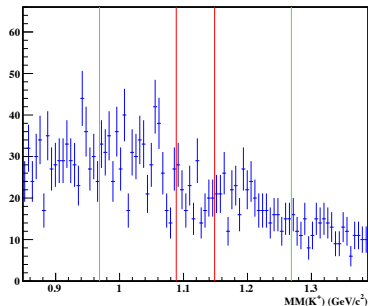


Search for baryon number violation (BNV) in Λ decays

- ▶ BNV reactions could explain cosmological matter-antimatter asymmetry
- ▶ Previous searches for BNV in nucleon, τ , top, D and B meson decays performed at Super-K, Belle, CLEO, BaBar, LHCb, ...
- ▶ This is the first search for BNV involving decay of strange states
- ▶ Investigated nine $\Lambda \rightarrow m\ell$ channels and $\Lambda \rightarrow \bar{p}\pi^+$, signs of beyond-SM physics
- ▶ Exploited large ΛK^+ sample in g11 dataset (1.8×10^6 events, $< 0.3\%$ background)
- ▶ No signal found; set upper limits on branching fractions (\mathcal{B}_{UL}) in range 10^{-7} to 10^{-5}
- ▶ M. McCracken, *et al.* (CLAS Collaboration). Phys. Rev. D **92**, 072002 (2015).



signal distribution for $\Lambda \rightarrow K_S^0 \nu$

channel	$\mathcal{B}_{UL} (\times 10^{-7})$
$\Lambda \rightarrow K^+ e^-$	20
$\Lambda \rightarrow K^+ \mu^-$	30
$\Lambda \rightarrow K^- e^+$	20
$\Lambda \rightarrow K^- \mu^+$	30
$\Lambda \rightarrow \pi^+ e^-$	6
$\Lambda \rightarrow \pi^+ \mu^-$	6
$\Lambda \rightarrow \pi^- e^+$	4
$\Lambda \rightarrow \pi^- \mu^+$	6
$\Lambda \rightarrow \bar{p}\pi^+$	9
$\Lambda \rightarrow K_S^0 \nu$	200