Publication Plans for 2016 Analysis

Matt Graham, SLAC
November 19, 2019
HPS Collaboration Meeting @ JLAB

Schedules

Vertexing Timeline

December 2019	January 2020	February 2020	March 2020
Finish 2016 MC Reconstruction	Moller Mass/Resolution	Tune Cuts for L1L2	Submit Unblinding Proposal
Complete Large MC Sample Analysis	Normalization and Radiative Fraction	Tune Cuts for SIMPs	Unblind Data (April 1)
Initial Analysis Procedure	Tune cuts for L1L1	Finalize Analysis Procedure	
Initial ML results	Finalize ML Approach		
	Finish SIMP MC		
	Prelim Document to Review Committee		

HPS-ANALYSIS-NOTE #XXX

Search for Displaced Dark Photons with the Heavy Photon Search Experiment at JLab

Matt Solt[1,2*], Pierfrancesco Butti[1], Mathew Graham[1], Tongtong Cao[3]

[1] SLAC National Accelerator Laboratory, Menlo Park, CA 94205
[2] Stanford University, Stanford, CA 94305
[3] Thomas Jefferson National Laboratory, Newport News, VA 23606

Bump-hunt Timeline

- Bring documentation up to date with the analysis 1 week. By Nov 29
- Determine the mass parametrization through MC and scale by Data_Moeller/MC_Moeller, By Dec 15
- Finalize d0 and PsumMin cut with New MC, by Dec 20
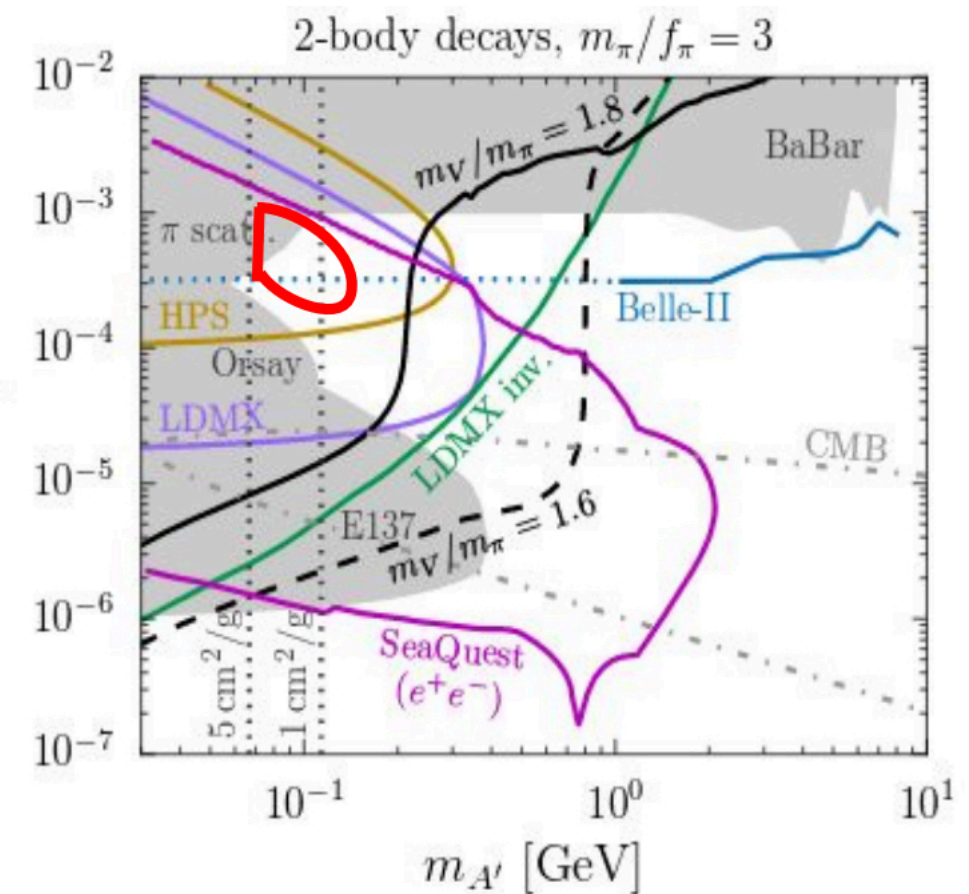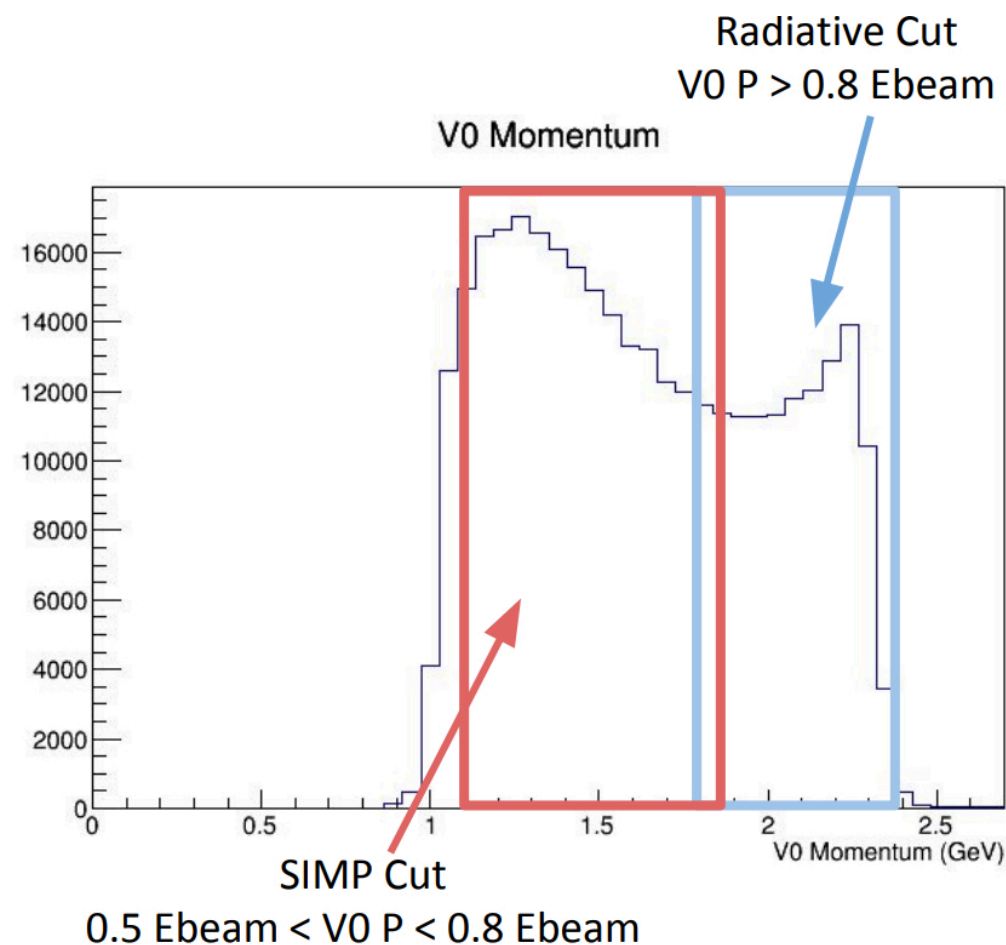- Systematic uncertainties, by the end of January

Resonance search analysis of 2016 HPS spring run data.

Bump hunt folks

October 7, 2019

Contents

SIMPs

We should definitely do the SIMP analysis for 2016…we probably actually have reach. I'm a bit skeptical MattS can really do this in parallel with vertexing and writing his thesis

Reach plot is old, need updated MC!

This is PR-centric…we could think about PL for one/more of these

1. MaxPubs: BH *and* vertex *and* SIMPs separately
   - gives us the option of submitting e.g. vertex and/or SIMPs as PRD-RC or PRL depending on impact
   - loosest timing…publish each when ready

2. Combine BH+vertex, SIMPs on its own
   - long PRD for BH+vert; PRD-RC (or PRL!) for SIMPs
   - SIMP result maybe has biggest impact?

3. MaxCitations: BH+vertex+SIMPs
   - put everything in a long, detailed PRD
   - means everything is done at the same time.

We have to get 2016 results out the door

…and move onto 2019 data…

- "something, something enemy of good" — some guy
  - two of our analysts want to graduate with this data
  - the rest of us need to get focused on 2019 analysis
  - except for SIMPs, this data will not give us any (except maybe a dimple) of reach
- Given the schedules posted by MattS, Rafo, I'd like to get review committees established and starting to meet by ~mid-January
  - starting early allows the review to be broken into chunks (e.g. event selection, signal extraction, etc) instead of done all at once
-