Resonance search analysis of 2016 HPS spring run data.

Bump hunt folks

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Contents

Introduction

The Heavy Photon Search (HPS) experiment has capability to search for a so called heavy photon (A') with two complementary methods.

1 Data set

Describe the data, beam energy, beam current, target runs, etc.

2 Event Selections

This section describes all the cuts that are applied to get the final vertex candidate distribution. The main goal of event selection cuts is to maximize signal sensitivity.

In this analysis only events that with "Pair1" trigger are used.

2.1 Cluster timing cuts

The readout window of ECal FADC data is 200 ns. Clusters coming from the physics events, that made generated the trigger, are located in a narrow time range in the readout window around t = 56 ns.

2.2 Track χ^2 cuts

2.3 Track-Cluster Matching

2.4 WAB Suppresion cuts

Describe L1 and d_0 cuts.

3 Parametrization of Mass resolution.

4 Bump hunt analysis

5 Study of systematics

Here goes studies on systematics