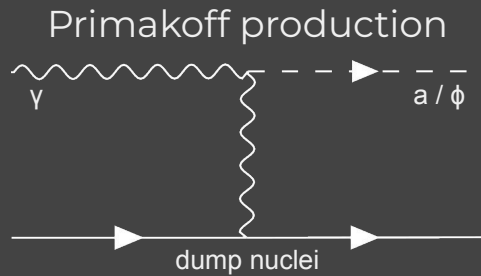


New Physics Search with the Optical Dump Concept at Future Colliders

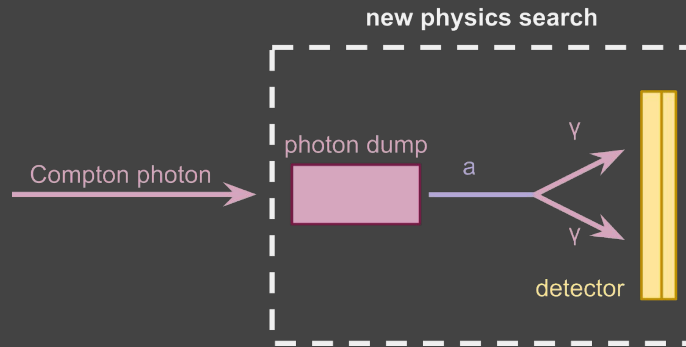
Ivo Schulthess, ETH Zurich & DESY
Simulation and Analysis

New Physics Searches with Photons

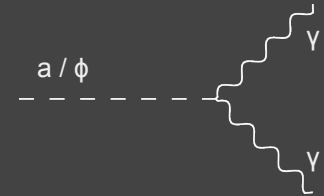
Fixed-Target Experiments with Photons



$$\mathcal{L}_a = \frac{a}{4\Lambda_a} F_{\mu\nu} \tilde{F}^{\mu\nu}$$



photon decay channel



$$\Gamma_{a \rightarrow 2\gamma} = \frac{m_a^3}{64\pi\Lambda_a^2}$$

New Physics Searches with Photons

Assumptions

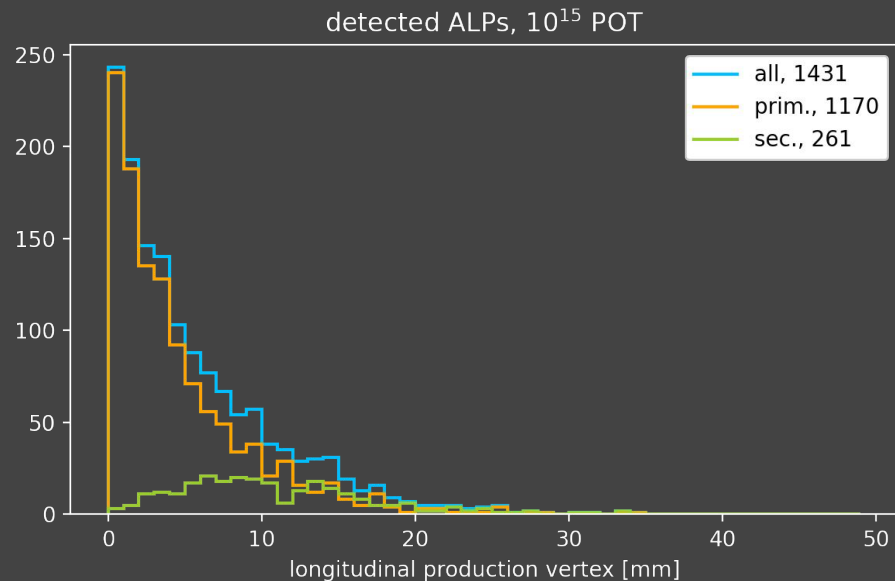
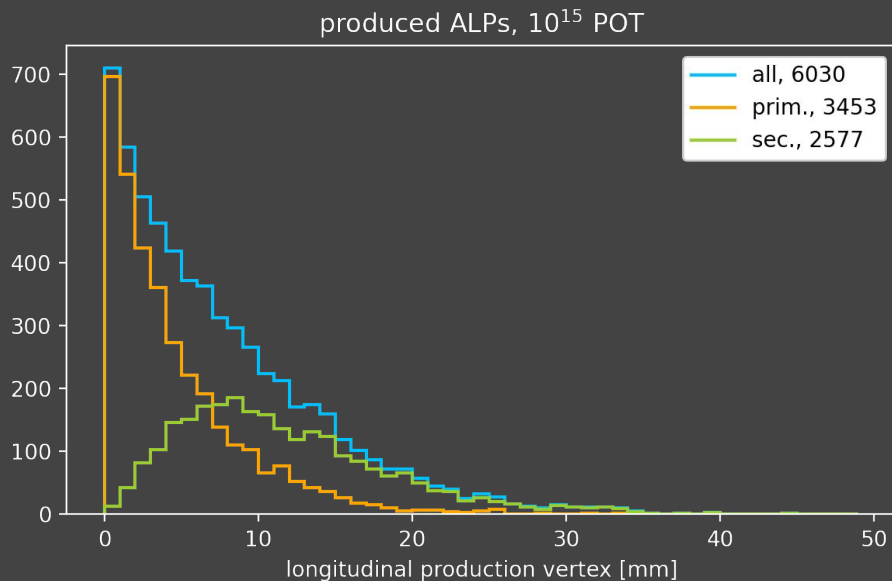
- dump length: 1 m
- decay volume: 2.5 m
- detector radius: 1 m

- monoenergetic photons 4.5 GeV
- detection threshold 0.5 GeV

- background free, 95% C.L.
→ 3 signal event boundary

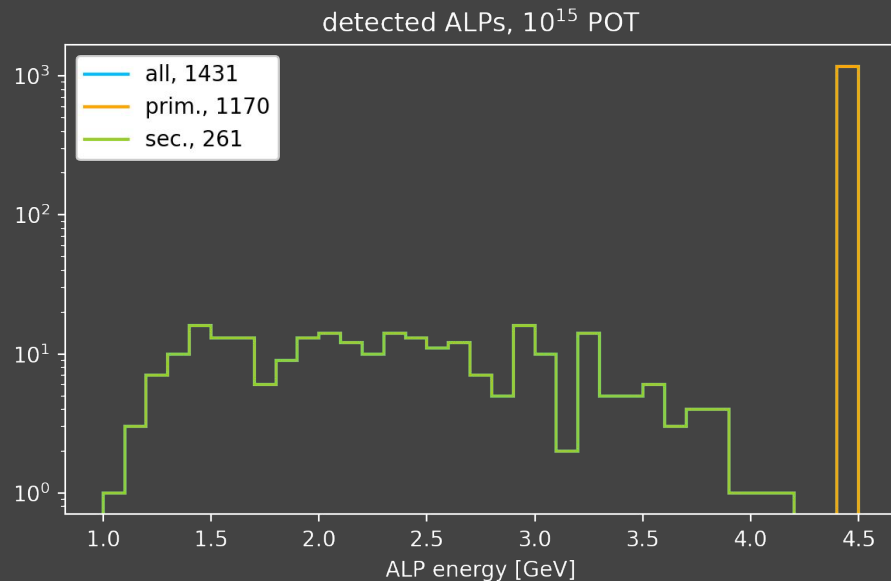
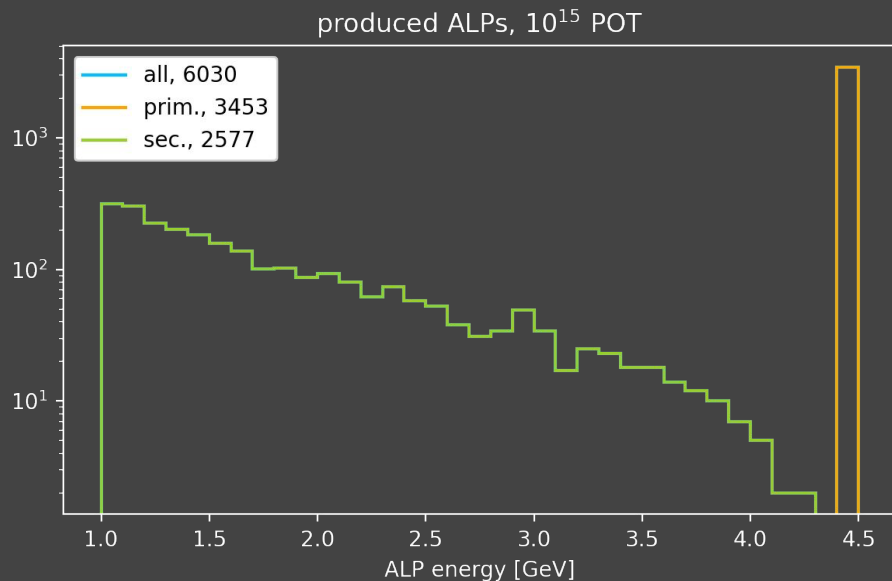
New Physics Searches with Photons

ALP Production Vertex



New Physics Searches with Photons

ALP Production Vertex



New Physics Searches with Photons

Phase-Space Coverage

