

## DarkCast: recasting dark-photon searches

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Searches for dark photons provide serendipitous discovery potential for other types of vector particles. We develop a framework for recasting dark photon searches to obtain constraints on more general theories - DarkCast. The framework includes a data-driven method for determining hadronic decay rates.

DarkCast can be used to any massive gauge boson with vector couplings to the Standard Model fermions.

We demonstrate our approach by deriving constraints on a vector that couples to the  $B-L$  current, a leptophobic  $B$  boson that couples directly to baryon number and to leptons via  $B-\gamma$  kinetic mixing, and on a vector that mediates a protophobic force.

DarkCast is a public code <https://gitlab.com/philtan/darkcast>.

**Primary author:** SOREQ, Yotam (CERN)

**Presenter:** SOREQ, Yotam (CERN)

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